The Paper Trade Journal.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XVII.—NO. 26. NEW YORK, JUNE 30, 1888. WHOLE NUMBER 739.

Trade Topics.

Coating Iron Plates with Lead.

Users of lead lined digesters for manufacturing wood fibre by the acid process will be interested in a new process for coating metal plates with lead which has been adopted by a firm in Philadelphia. This process embraces a special treatment for cleaning and preparing the metal and a separate method of treating the lead coating bath. It has been found that where acids alone were relied upon to clean the plates to be coated—this being the method in current use—the surface of the plate is not entirely freed from impurities; in other words, not chemically cleaned, and the coating subsequently applied will therefore not adhere perfectly. The process, therefore, uses the acid bath, when it is employed at all, only as a preliminary step in cleaning and for removing quickly the greater portion of the impurities before thorough cleaning is effected by other means. These form the essential features of the process, and in cases where time is no great object the acid bath is entirely dispensed with. The plate to be cleaned—whether having been first treated in an acid bath or not—is placed in a bath of cyanide of potassium and water in about the proportion of 6 ounces of the former to 1 gallon of the latter. The plate is then subjected to the action of a galvanic current, being placed in the position occupied by the anode in an ordinary electro plating bath. The result is a perfectly clean surface on the plate under treatment. After being thus chemically cleaned the plate, or whatever the article may be, is immersed in a bath of chloride of zinc made by dissolving metallic zinc in hydrochloric acid, until the latter is thoroughly saturated and will take up no more of the metal. This bath prepares the plate for a more ready adhesion of the coating to be applied and constitutes an important step in the process.

The method of treating the final bath of molten lead which is to be used as the desired coating is a separate process. Lead while in a molten state absorbs various gases from its surroundings and from the atmosphere. These absorbed gases prevent the lead from adhering closely to the surfaces of different metals which are dipped into it and cause small holes and blisters. Molten lead is also somewhat thick and sluggish, and a coating formed in the ordinary way is therefore very apt to be full of ridges, the result of uneven distribution. To overcome all this the lead is treated in a molten state with sal ammoniac, arsenic and phosphate of lead. The sal ammoniac has great cleansing power and drives out from the lead all the gases and impurities which it has absorbed from its surroundings.

The arsenic by its hardening and solidifying qualities renders the lead incapable of taking up any further impurities. It has been found, in fact, that it permanently protects the lead against these influences, and the metal may be melted over and over again without losing the effect. The phosphate of lead finally renders the mass more fluid. The combined effects of the three materials on the molten lead have been found to be such as to make it an excellent coating.

In preparing the lead bath ordinary pig lead is melted in a suitable vessel and covered with powdered charcoal to prevent oxidation. This having been done there are added for every 100 pounds of lead first 3 ounces of sal ammoniac, then one-half ounce of arsenic, and after this 3 ounces of the phosphate of lead, and finally one-half ounce of borax or similar flux. The substances are introduced separately and immediately, one after the other, the molten lead being gently agitated, in the meantime, so as to produce a homogeneous mixture.

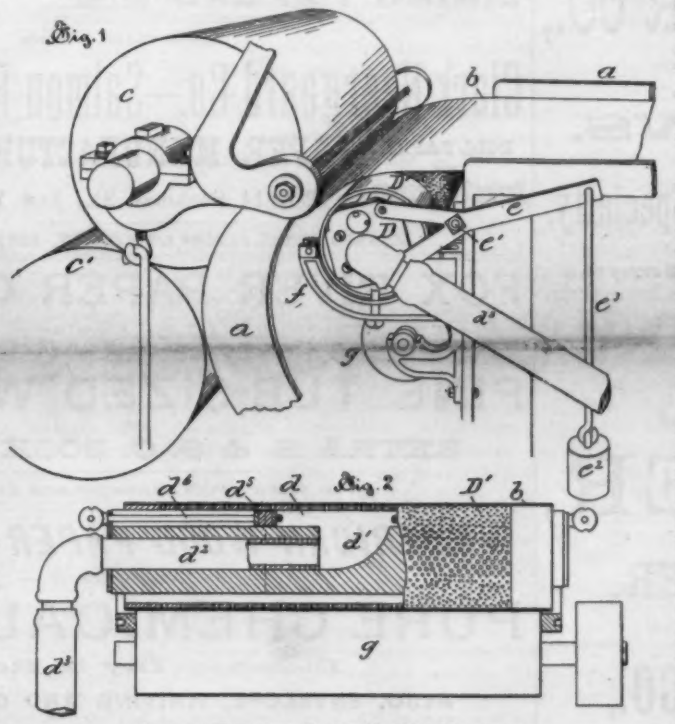
The plate to be coated with the lead, after having been prepared by the various processes above described, is then dipped into this bath in the same manner as when coating with zinc. If the bath is not needed for immediate use the lead may be run into bars or ingots and used at any future time. It is stated that the proportions of salammoniac, arsenic, phosphate of lead and borax may be varied, and the use of the borax or flux omitted entirely. The best results, however, are apparently obtained when the proportions named are retained.

Suction Box for Paper Making Machines.

The illustration shows the design of a non-rotary suction box, a revolving perforated shell turning on the box, and a shell supporting carrier roll, Figure 1 being a perspective view showing part of a paper making machine with this suction box embodied therein; Fig. 2 a detail view, in lengthwise section, of the suction box.

The letter *a* shows the frame of a paper making machine having the usual wire, *b*, and coucher rolls, *c c'*, the suction box D being mounted across the frame beneath the wire in the position usually occupied by the guide roll which is used to change the direction of and support the wire. This suction box is made up of any convenient material, as wood, and is supported at its opposite ends on vertically adjustable bearings, which in this instance consist of the levers *e*, pivoted to the frame by bolts *e'*, and connected to the outer ends of the suction box by bolts or screws.

To the rear ends of these levers are attached the weights e^3, by means of the rod e^2, the effect being to lift the suction box toward the wire on its under side. On the upper side of this suction box is a lengthwise channel, *d*, which deepens at the centre *d'*, where it connects with an outlet pipe, d^3, which extends to an end of the suction box, where it is connected with a pipe, d^3, leading to a pump or similar suction device. In each end of the channel *d* in the suction box is located a tightly fitting head d^5, borne on the inner end of a rod, d^6, by means of which the head is movable longitudinally in the channel, the object of this adjustability of the head being to adjust the suction box proper to the width of the sheet of paper moving over it. On the outside and inclosing the sides of this suction box is a perforated shell, D', mounted on suitable bearings, *f*, and revolving upon the suction box D, being supported, however, upon the carrier roll, *g*, which extends beneath the shell and for substantially its whole length. This carrier roll *g* is driven by a belt or gearing in any suitable manner, and it in turn drives the perforated shell, and causes it to turn upon the suction box in the same direction and at the same rate that the wire is moved along the machine. As the paper borne on the wire, which in turn is supported on the shell, moves across the channel of the suction box, the moisture in the pulp is drawn into the suction box and out by the pump. In each of the bearings *f* the shell is supported on opposite sides on anti-friction rollers or similar devices which tend to hold it in a central position. In this structure it will be seen that the perforated shell which forms the cover of the suction box moves at the same rate of speed with the wire, and therefore has no tendency to wear it. The shell is supported throughout its whole length by the carrier roll, the surface of which may be covered with rubber or other suitable material, which will enable it to drive the shell by frictional contact. The box is held to suitable contact with the inner surface of the revolving shell by means of the adjusting device of levers and weights, as already described.



Suction Box for Paper Making Machines.

Practical Paper Mill Talks.

[WRITTEN FOR THE JOURNAL.]

By J. A. Lawrie.

There is little use of advocating great reforms. The change is too sudden and extensive to be at once clearly comprehended. While the last "Talk" advocated belt drives versus main gears, the writer finds ample room for improvement in much of the existing gearing, and believes that whoever neglects gears will do no better with belts.

Fancy a small mill where the main gears are both of iron, one pair in use, one pair spare and two or more pair lying out at the back door, demoralized by the loss of anywhere from one to several or more teeth. It strikes me that a cast iron wheel 36 inch diameter, 8 inch fall, 2½ inch pitch is a pretty costly piece to throw away just because one or two teeth are broken. Of course no repair hand is supposed to put in an iron tooth. Yet it may readily be done by any ingenious mechanic if the mill is not close by some job shop.

Make a pattern of the tooth, with the addition of a dovetailed piece on the root, send it to some foundry and get as many as necessary cast. They may be filed up to match but if the other teeth be much worn make the working side on the pattern a trifle slack, so that the inserted tooth will not have to stand the whole strain at every revolution. Clip off what may be left of the broken tooth and clip and file in a recess for the dovetailed bottom of the tooth. A couple of pins will hold it in place when fitted properly. This is a pretty delicate job of dentistry, but it may be done in a pinch.

A better plan is, when you find your iron wheels giving out so frequently, to order a pair of mortise gears. I will modify this statement by adding that only in case of reducing speed from upright to line shaft or at even speeds, practice having demonstrated—in cases—that where the wheel runs at a lower speed than the line, iron and iron work the best, but in the case in mind wood and iron would prove more satisfactory and economical. However, there is no settled opinion which governs all cases. Machinery is full of intricacies which oftentimes baffle judgment.

Some writers claim that a system of belts obviates the necessity for accurate alignment of shafts, as is required in the case of gears. This, however, is like saying that a man can live on a certain diet, which may be true while life lasts. All inaccuracy in the lining of shafts detracts in due proportion from the life of the machinery—be it belts or gears—and adds to the expense of maintenance. Gears will bear a greater variance of centre lines of shafts in proportion to their distances from junctions or axial lines than belts or pulleys will, yet it is not policy to allow them to run in that condition.

A little study of the principles of gearing will elucidate the subject. Let us start on spur gears. Any machine tender or calender man knows how futile is the attempt to calender paper with rolls not lined up—that is, the centre line of faces out of parallel. Spur gears are on the same principle exactly, while the only difference in the case of bevel gears is that instead of being two cylindrical objects we have two cones, the lines of contact on which should coincide perfectly. The only limit to inaccuracy of lining up is the clearance of the teeth when in mesh at the start, but if allowed to run so this limit is extended by wear until the teeth are worn completely off on inside and outside points. Therefore it is evident that to secure the most value from a pair of gears they must be kept in perfect line.

Gears, especially bevel gears, have a great notion of crowding and pushing, and unless secured very substantially will get a long way from their proper positions. This is one evil which has no existence with belting, unless, as in many instances, the belts are kept inordinately tight.

Perhaps it will be well to speak of an error which many people fall into concerning belting; that is, in regard to its weight, popular opinion ruling that an eight ply belt is more durable than a five or six ply. However, this idea is deprecated by belt manufacturers, their agents and practical users. Instances might be mentioned of the unsatisfactory use of heavy belts, but it is not necessary to give them here.

There is so much about belts to argue on that the mere mention of belt will start it, but there are a few indisputable facts in the same connection. Tensile strength and pliability are two necessary points, but it is bad to sacrifice the former for the latter. Rather cater to strength by adding width, or for an expedient run two belts, one over the other.

Coloring and Drying Tissue Paper, &c.

A patent has been taken out in England for a process of coloring and drying tissue and other papers.

The paper is passed, directly after receiving the dye, in a vertical position between pressing rolls covered with felt, which serve to impregnate the paper with the coloring matter while removing the surplus of color. The paper thus treated is then passed unsupported through a drying apparatus arranged close to the pressing rolls, and comprising two rollers covered with felt and placed at or about the same level. The rolls are mounted in suitable frames with lever pressure arrangement at each end and are caused to revolve inward. The dye is run between the point of contact of the rollers from a perforated pipe above. The paper to be treated is unwound from a continuous roll and enters between the nip of the pressure rollers. By this means the paper passes through a small quantity of solution lying just above the nip and immediately afterward receives the pressure of the rollers and becomes impregnated. The surplus dye runs off at each end of the pressure rolls and is caught by a receiver placed underneath, and may be used over again. The bulk of the dye is placed in a tank below the pressure rollers and is pumped up into a small box above, from which it is supplied to the rollers, the box having an overflow into the main tank, so as to keep up a regular pressure and make the action continuous. After the paper has passed through the pressure rollers it is taken off at one side and conducted unsupported direct to a drying appliance consisting of a system of air drums with interior fans and steam heated drying cylinders. By this arrangement the paper is dried entirely by air, the cylinders being used cold to keep the paper flat and free from "cockles." After passing through the the drying apparatus the paper is reeled up as usual.

The Paper Trade of India.

The manufacture of paper in India seems to be making steady progress, judging by the official returns just received. The quantity of paper made is returned as follows for three years:

1884	pounds 9,796,041
1885	12,303,327
1886	16,160,768

In the Bombay Presidency there are two private mills and two joint stock companies.

The Girgaum Paper Mill, established in 1862, employs fifty-five hands, and turned out in 1886 591,064 pounds of blotting and brown papers and white cartridge, the raw material used being rags, straw and hemp. The Ahmedabad Mill, established in 1881, has ceased working, owing to some defect in the machinery. The Mahamadbhai Jamaldiren Paper Mill at Surat, established in January, 1878, employs forty hands, and made 72,000 pounds white country paper and blotting, and brown paper and brown cartridge, using only rags.

There is the Deccan Paper Mill, capital £50,000, under construction at Poona, which is to compete with the Indian Paper Mill at the same place, established in July, 1885, with a capital of £40,000. The average daily number of hands this last employs is eighty-five; it turned out 216,444 pounds of coarse paper from rice straw in 1886.

In Bengal there are two joint stock companies, the Bally Paper Mill at Howrah, near Calcutta, established in July, 1867, with a nominal capital of £96,800. This employs about five hundred hands daily, and made in 1886 7,392,000 pounds of printing and cartridge paper of sorts, cream laid, blotting and brown papers. The raw materials used are rags, megas and other grasses, jute and hemp cuttings, gunny bags, &c.

The Tetagarh Paper Mill was established in July, 1882, with a capital of £60,000. The average daily number of hands it employs is 284. It made in 1886 3,440,640 pounds of printing, blotting, white cartridge, yellow wove, brown and wrappers, working up the same raw materials as the other Bengal mill. Munj grass is common in North India, and another species, *Saccharum sara*, and the stems of the common sugar cane after passing through the mill may be used in paper making.

The Upper India Couper Mill was established at Lucknow on November 1, 1879, with a capital of £80,000. It employs 273 hands, and made in 1886 2,912,000 pounds of printing, colored papers, blotting and cream laid. The India Paper Mill at Gwalior is a joint stock mill, established in 1883, on a capital of £60,000. It employs daily 200 hands, and made in 1886 1,536,640 pounds of printing and foolscap papers. The raw materials employed are munj grass (*Saccharum munja*), and old gunny rags. The native made paper does not appear as yet to interfere with the imports of British papers, which have averaged £76,260 in the last five years, as the following figures will show:

1883	cwt. 79,333
1884	81,452
1885	69,690
1886	71,065
1887	79,824

The imports into India of paper from all foreign countries are marked by an increase. The value of the imports in 1885 and 1886 were about £320,000, but in the last financial year they rose to £412,245, besides £6,000 more for 8,000 cwt. of pasteboard and millboard. Austria is increasing her shipments of paper to India, and there are also large imports from China and Singapore.—*Paper Makers' Monthly Journal.*

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Philadelphia Notes.

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, Pa., June 27, 1888.

It is remarkable, to say the least, that with the mercury playing hide and seek up among the nineties our paper trade continues to not only show signs of life but to keep fairly active, with a very fair condition of things generally. From the continuance of the warm wave, which struck us almost two weeks ago, it would appear that the quicksilver in our thermometers had gone on a visit to the 90° notch, and had concluded to spend the summer there. In the face of all trade continues fair.

The Knights of Labor here are making big preparations for the furtherance of their interests. They have located their officers' rooms in the old Matthew Baird mansion, 814 North Broad street, with the building on the rear street, which they are now converting into a first-class, well equipped printing office, from which they will hereafter issue the *Journal of United Labor*. They have recently put in a large cylinder press of the Scott pattern, together with job presses, paper cutter, type, &c. A. M. Dewey, for a long time past connected with the labor movement, has been selected as the editor of the *Journal*.

Trade with the live house of Irwin N. Megargee & Co. continues very good; in fact, above the average for this time of the year. True, the jobbing city trade is not noticeably active, for the reason that printers, lithographers, &c., are, as a rule, not specially busy at present. The firm's orders for book papers, however, are both numerous and heavy, with a very fair volume of trade for the balance of the special lines which it carries. The Megargee boys have just moved into their comfortable summer home at Germantown, where they will remain until cool autumn weather is at hand.

Herman Hoopes, head of the Nescochague Manufacturing Company, who is well known as an authority upon, and successful breeder of, fine Jersey cattle, is also an admirer of fine horseflesh. He has within the past few days had built to order by Fulton & Walker a truck and covered wagon, handsomely painted and lettered, to meet the demands of his trade. He has also purchased two magnificent specimens of the equine race, of Percheron stock. They are noble looking beasts, and with new harness, &c., make a highly presentable appearance and attract no small amount of attention. Trade with the Nescochague Company continues fairly good. Mr. Hoopes and family leave on Saturday next for Spring Lake, returning therefrom in about a month to spend the remainder of the summer at his stock farm in Maryland.

The wideawake house of A. G. Elliot & Co., proprietors of the Rose Glen Mills, has within the past few days purchased the old Dutton Cotton Mill at Paschallville, a southwestern suburb of this city. The present property is four stories in height, with wings, &c., all of which will be improved and put in first-class condition by the Rose Glen folks by the addition of the latest improved machinery, &c. The new mill will be devoted to the manufacture of A. G. Elliot & Co.'s special vegetable parchment paper. The admirable location of the new mill will result in a very material saving of freight rates, hauling, &c. The property includes two acres of ground, with buildings. Jos. B. Mitchell, the junior partner, has returned from Baltimore, whither he journeyed with the bicyclists from this city, all of whom attended the meet of the L. A. W., held in the Southern city. Mrs. Mitchell and family have "arrived out" on the other side of the big salt pond, all in good health. They will remain a month or more.

R. M. Fairfield, of the Fairfield Paper Company, of Salmon Falls, Mass., was with us a few days ago. He reports his new mill busy on superfine writing papers, which are taking well wherever introduced. I. N. Megargee & Co., of this city, are the agents here for the Fairchild Company and its products.

It is believed here among the paper men that the large amount of printing which is certain to be done for election purposes during the approaching political campaign will of necessity have a tendency to make the paper trade "hump" itself during the next few months. Already one or two large orders have been talked of.

Little or no dropping off in trade is looked for during the remainder of the summer.

CORONET.

Chicago Notes.

[FROM OUR REGULAR CORRESPONDENT.]

WESTERN OFFICE PAPER TRADE JOURNAL,
114-118 La Salle Street,
CHICAGO, June 26, 1888.

For the past week all attention has been centred in the National Republican Convention, and as a result of its efforts the people of the United States are now to choose between Harrison and Morton and Cleveland and Thurman.

On Friday, June 22, the paper trade in Chicago witnessed a new thing in the sale of salvage paper from the late fire of the Graham Paper Company, Kansas City, Mo.; in all 475 tons, consisting of ledger, book, news, writing, wrapping, express and manilla papers, were disposed of.

At the appointed hour the auctioneer called arbund him the eager bidders for the spoil, and such it was, as it was all damaged more or less by fire, smoke and water. With the exception of a few faces the bidders were strangers to the paper throng, but the allurements of something cheap brought forth a goodly gathering of buyers from no one knows where. Some of the stock brought good prices. Two cases of linen paper were knocked down at 16c. The same or a better quality can be had daily at 13c. and one dealer said this morning that he had a lot on hand he would dispose of at 10c. A lot of damaged Weston's paper was bid in at 8½c., and so it went. The question was frequently asked: Why should the Graham Paper Company ship this stock all the way from Kansas City and pay the freight here? One solution is that it didn't want it disposed of in its own market, and this belief is warranted by the report that it had an agreement with the insurance companies that the stock was not to be sold either in St. Louis or Cincinnati.

Quite a thought for St. Louis, but it was too small a drop in the bucket to take cognizance of in Chicago. In past years this city was a pet market for the East to dispose of its surplus until the the jobbers banded together and bought it up in a lump, and then it ceased. Much of the auctioned stock was not fit for paper stock, but it found buyers, and being sold by the pound, assisted by its watered weight, a shortage will some time become a subject for consideration and reckoning.

If St. Louis wants to keep the good will of her sister city she will hereafter keep her remnants at home and therewith feed her marts.

Charles Dobilinski landed in Chicago when the convention was in its prime and at the time some two hundred thousand strangers were, like Charles, seeking a place to rest overnight. To every inquiry for room he heard "Full." It was a hot day for Charles, atmospherically and disappointingly, but he stood discouragements well until near night, when hope had about disappeared; he grew restless and gave way to his feelings. Later in the evening he found shelter at the Richelieu.

Montgomery, Ward & Co.'s yearly contract for paper is now in the field for bids. It calls for machine finished book. It reaches about $30,000.

W. S. Holmes, of the Harding Paper Company, is in the city. Mr. Holmes speaks encouragingly of trade.

Follansbee & Tyler report an increasing demand for white shavings, with a quiet call on other grades within the past three weeks.

NOZ.

Boston Notes.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
250 Devonshire Street,
BOSTON, June 28, 1888.

As the month draws to a close business in paper trade circles grows lighter. The same quiet must to some extent prevail in other lines of business, for the printer, who works for all, is having lots of idle time just now, and in consequence his wants are limited and his call for paper is not so constant upon the stock of the local dealers.

While city trade is somewhat limited in its movement, there is a very fair shipment of paper noted in response to mail orders from distant buyers. Campaign goods of the portrait line are making their appearance, and it is possible that in this direction alone large quantities of print paper will soon be called for. No large orders are reported as having been placed this week by local publishers.

In the paper stock trade there seems to be a quiet, restful feeling. The movement of paper stock is of small volume, and imports are about in keeping with the limited sales. The condition of the market remains about the same, and there seems to be almost a deadlock in the paper stock business. So long as manufacturers can supply their immediate wants from the local supply of foreign stocks, or from the domestic supply, prices cannot be advanced. Importers claim that the firmness of foreign quotations and the higher freights to this country prevent any concession in prices, and so long as buyers and sellers cannot harmonize in their views just so long will trade continue in this unsettled and unsatisfactory condition. Importers are willing and anxious to do business, but they are unwilling to import stock at a loss if they can help it, and the foreign packer won't ship his stock across the water to realize less on it than he could sell it for at home. That is the situation to-day. Time will undoubtedly develop a change, but when?

The chemical market has not as yet experienced any boom. Bleaching powders are firmer this week and very scarce, quotations being 1.85@1⅞c. Caustic soda is in very light local supply and fair demand at 2.20@2.20½c. per pound of 60 per cent. Soda ash is unchanged, the old figures of 1¼@1.40c. being quoted. Soda crystals are held at 90c. Rosins are quiet at former quotations.

Imports this week are somewhat light, both in paper stock and chemicals, owing to the limited number of steamers arriving from Europe.

Hon. Byron Weston, the noted paper maker, of Dalton, Mass., is in town this week.

Col. Edward H. Haskell has returned from his Western trip.

Thomas Groom, stationer, died on Saturday night last and was buried on Wednesday, the jobbing stationers and the large retailers of the city closing their stores at 3 o'clock on the day of the funeral in respect to the deceased.

The Glen Manufacturing Company's No. 3 mill at Berlin Falls, N. H., will start up this week. The product of the mill, which is wood pulp, will add about six tons (dry) to the daily wood pulp production of this company. This new mill is supplied with the Hunt Machine Company's horizontal water wheel and uses the Frambach pulp grinder.

The weather is rather choppy just now, hot and very hot, cold and quite cold, fair and wet, all in quick succession and some days all together.

DELESDERNIER.

Holyoke Notes.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, MASS., June 28, 1888.

Everything seems to be calm and serene here this week, and there is hardly a ripple on the business surface. Orders continue to come in with almost clockwork regularity and most manufacturers seem to be satisfied with this phase of the situation, but prices are still far from being satisfactory. Western orders for fine goods are not as numerous as they were, owing probably to the good stocks laid in before the blizzard which now must be worked off. The mills will shut down on Tuesday night and the season of repairs and improvements will follow. This brief season of rest will be welcomed by the employees, although many of the manufacturers manage to find something to keep busy such of the help as care to work. This term of idleness will take considerable paper out of the market, but it will do no harm. The mills running on news are driven and probably will be till after the Presidential election. There is a good movement of book and engine sized papers. Fine writings are a trifle slack just now. Manillas and wrappings are in fair demand. There is very little change to note in the stock market, foreign rags being scarce and not greatly in demand.

The news of the nomination of Harrison and Morton was received here with considerable enthusiasm, and the campaign promises to be lively. Cannon boomed, bands were on the streets, a large banner bearing the names of the candidates was put out, a ratification meeting was held and a strong campaign club organized, which has in its ranks many prominent manufacturers.

Joseph Harvey, a former employee of the Holyoke Paper Company, brought suit yesterday against his former employers for $10,000 for alleged injuries. The suit will be tried at the October term of the Superior Court.

The Holyoke Paper Company at its recent annual meeting elected these officers: President and agent, O. H. Greenleaf; treasurer, O. S. Greenleaf; directors, J. Q. Preble, Samuel Raynor, W. I. Martin, E. C. Wilson, H. M. Phillips, O. H. Greenleaf, C. H. Heywood. The capital stock was increased from $300,000 to $500,000.

J. S. McElwain, agent of the Parsons and Nonotuck paper companies, has decided to accept the treasurership of the Valley Paper Company. Henry E. McElwain, his son, now secretary of the Nonotuck Company, will assume the management of the Valley Mill on Tuesday.

Congressman Whiting spent last week in the city and returned to Washington on Monday night.

D. M. Dickinson, recently treasurer of the Excelsior Paper Company, has just bought a farm of 300 acres at Atilissa, Ia., to which he will remove, with his family, about the middle of next month. John Holdroyd, recently of the Dickinson & Clark Paper Company, will accompany Mr. Dickinson.

The Holyoke Envelope Company put out a handsome Harrison and Morton flag on its new mill at South Holyoke yesterday.

Walter P. Hannabury, sixty years old, committed suicide Monday evening by rowing in a boat over the Holyoke dam. Those who saw the affair say that the man rowed calmly to the crest of the dam, and then sat quietly as his boat went over. Nothing has been heard of boat or man since.

Hormisdas Views, a truckman employed by C. M. Sheldon, was fined $14 in the Police Court yesterday for stealing a bale of sacking weighing 433 pounds, and selling it to a junk dealer. The rags were taken from the Wauregan Paper Mill and were to have been delivered to the Newton Paper Company.

Joseph Roberts, an employee of the Nonotuck Paper Company, had the fingers of one hand caught in the calender rolls and badly crushed one day this week.

P. J. Griffin, of North Wilbraham, has been engaged by F. E. White to take charge of his ruling machines.

The recent heavy rains have caused the water to rise very rapidly within a few days, and quite a volume is now pouring over the dam.

H.

Signal Service Supplies.

Following are the awards for Signal Service supplies:

PAPER.

Item 1. 100 reams book paper, uncalendered, $2.69 per ream, Bulkley, Raiguel & Co.

2 250 reams map paper, superfine, sized and supercalendered, cream tint, 24x38 inches, $3.23 per ream, do.

3. 100 reams do., 19x24 inches, $2.47 per ream, do.

4. 150 reams folio post paper, white, wove, 17x22 inches, $3.29 per ream, do.

5. 100 reams flat letter paper, white, wove, 10x16 inches, $1.47 per ream, do.

6. 100 reams do., 20x16, $1.91 per ream, do.

7. 50 reams tissue manilla, 11x15 inches, 12c. per ream, A. G. Elliott & Co.

8. 50 reams quarto post, to be ruled on 3

ROLL PAPER FOR PERFECTING PRESSES.

THE GLEN MANUFACTURING CO., Mills at Berlin Falls N. H. H. M. KNOWLES, Treasurer.

THE HAVERHILL PAPER COMPANY, Mills at Haverhill, Mass. I. B. HOSFORD, Treasurer.

DAILY PRODUCT: 80,000 Pounds Finished Paper; 60,000 Pounds Wood Pulp, Dry Weight.

OFFICE: 244 WASHINGTON STREET, BOSTON, MASS.

ROLL PAPER FOR PERFECTING PRESSES.

THE STODDARD PAPER CO.

OFFICE: NEW LONDON, CONN. | Mills at Versailles. Conn. | HENRY H. STODDARD, Treasurer.

PERKINS, GOODWIN & CO.,

Nos. 66 and 68 DUANE STREET, NEW YORK,

Have on hand and to arrive all grades of Bleached and Unbleached

SULPHITE AND SODA PULPS.

SOLE AGENTS FOR ZELLSTOFFFABRIK, WALDHOF, GERMANY.

DAILY PRODUCTION, 60 TONS DRY.

SEND FOR SAMPLES AND PRICES.

or 4 sides, $1.95 per ream, Wm. Ballantyne & Son.

9. 100 reams quarto post, half sheets, ruled on 2 sides, $1.82 per ream, do.

10. 25 reams legal cap, white, $2.24 per ream, D. W. Glass & Co.

11. 20 reams envelope, buff or yellow, $2.53 per ream, Bulkley, Raiguel & Co.

12. 20 reams blotting paper of pure linen stock, $9.23 per ream, Wm. Ballantyne & Son.

13. 5 reams foolscap, white, ruled or plain, $1.95 per ream, do.

14. 10 reams telegraph paper, $1.24 per ream, Rider & Addison,

15. 1,200 pounds telegraph paper, cut 6x9 inches, 4¼c. per pound, Bulkley, Raiguel & Co.

16. 10 reams strong, brown, rope manilla wrapping paper, 24x36 inches, $7.21 per ream, do.

17. 10 reams, do., 36x40 inches, $7.09 per ream, Rider & Addison.

18. 300 pounds copying paper, 6x9 inches, 15c per pound, W. Ballantyne & Son.

19. 5,000 sheets carbon paper, black, 13x27 inches, 50c. per package, E. Morrison.

Supplies—Interior Department.

The following is a list of successful bidders and contracts awarded for supplies for the Interior Department:

Bulkley, Raiguel & Co., Philadelphia, Pa., items 17, 34.

Carew Manufacturing Company, South Hadley Falls, Mass., item 23.

Detre & Blackburn, Philadelphia, Pa., item 24.

W. J. C. Dulany & Co., Baltimore, Md., item 13.

A. G. Elliott & Co., Philadelphia, Pa., items 8, 15.

E. Morrison, Washington, D. C., item 25.

Rider & Addison, Washington, D. C., items 11, 32.

Sterns Paper Company, Holyoke, Mass., item 4.

West Jersey Paper Company, Camden, N. J., items 18, 19, 20.

Woolworth & Graham, New York, item 2.

Weston & Bryan, Philadelphia, Pa., item 14.

Wyckoff, Seamans & Benedict, Washington, items 22, 26.

Wm. A. Wheeler, Jr., New York, items 31.

PAPERS.

Item 2. 200 reams legal cap, best, white, ruled, 14 pounds to ream, $1.69 per ream.

4. 1,000 reams letter paper, best, cream, 12 pounds to ream, demy size, ruled, $1.28 per ream.

8. 200 reams commercial note, ruled, 7 pounds to ream, 85 cents per ream.

10. 100 reams note paper, best, linen stock, ruled, 6 pounds to ream, no award.

11. 10 reams folio post, linen stock, 17x22 inches, white, 16 pounds to ream, $1.20 per ream.

13. 10 reams super royal, best, linen stock, 20x28 inches, ruled, 51 pounds to ream, $8.75 per ream.

14. 5 reams demy paper, best, linen stock, white, 16x21 inches, 28 pounds to ream, $3.87 per ream.

15. 40 reams envelope paper, gold, royal, 28 pounds to ream, folded once, $2.25 per ream.

17. 40 reams wrapping paper, rope manilla, 40x48 inches, 150 pounds to ream, $8.63 per ream.

18. 75 reams do., 36x40 inches, 90 pounds to ream, $6.30 per ream.

19. 50 reams do., 24x36 inches, 60 pounds to ream, $4.20 per ream.

20. 25 reams do., 18x24 inches, 40 pounds to ream, $2.80 per ream.

21. 125 reams blotting paper, 19x24 inches, 100 pounds to ream, $10 per ream.

22. 200 reams paper, cream, 150 reams 7¾x9¾ inches, and 50 reams 8x12½ inches, $2.98 average per ream.

23. 300 reams paper, white, 200 reams 7¾x9¾ inches, and 100 reams 8x12½ inches, $1.21 per ream.

24. 5,000 sheets semi-carbon paper, 3 99-100c. per sheet.

25. 100 reams paper, American linen, 50 reams 8x12½ inches, $1.75, and 50 reams 7¾x9¾ inches, $2.35.

26. 100 reams paper paragon, No. 1½, 75 reams 8x12½ inches, and 25 reams 7¾x9¾ inches, $2.28 average per ream.

31. 10,000 rolls paper, toilet, in rolls, 8 42-100c. per roll.

32. 6,000 sheets cardboard, extra heavy, white, 18x22 inches, in packages of 50 sheets each, 26-10c. per sheet.

34. 2,500 sheets bristol board, 3 sheet, 15x20 inches, 4c. per sheet.

Analysis of Wood Fibre.

Mr. Krog-Jensen, manager of the paper mills at Strandmoellen (Germany), writes as follows to the *Papier Zeitung:* "Testing for wood fibre by phloroglucine has caused us, as it has others, a great many disappointments, owing to the great sensitiveness of wood to this reagent. As I have not yet seen any detailed particulars as to the sharpness of this reagent, and as I think the question is of interest to manufacturers, I made some experiments to ascertain the lowest limit for ascertaining the presence of wood fibre by phloroglucine. I will only say that I supervised all and did most of the work myself.

"A beating engine was thoroughly cleaned and furnished with rags and straw fibre (without waste). After mixing, I had sample A (free from wood fibre) made by hand in a small vat. From well ground and mixed wood pulp I then took out samples from all parts of the vat, mixed them up, and ascertained their contents in absolutely dry wood pulp. At the same time I weighed off five parts, each of exactly 500 grams of absolutely dry wood pulp. After such a part had been finely divided on the beating engine, the latter was set at work for an hour with constant agitation and mixing. I then took out a sample and made it into paper; I again added 500 grams of absolutely dry wood pulp, took out a sample, and so forth. Altogether I had six samples, and with the following contents of ground wood: of B, 0.613 per cent.; C, 1.117; D, 1.84; E, 2.454; and F, 3.067 per cent.

"From the examination it was evident that 0.5 per cent. could be determined from the color alone. With the small quantity of wood fibre the paper had not taken on the recognizable reddish coloring, but yet the naked eye could see the red fibres of wood which lay scattered over the whole surface.

"It follows from this that phloroglucine will indicate infinitesimal quantities of wood fibre, such as can hardly be got rid of, especially in a mill where it is used and where there are so many hidden places, whether corners in the pipes or in the heating engines, where small quantities of the wood pulp collect and run off when the engines are emptied. The beating engine in question gave 163 pounds of paper. I know a case in which a paper showing the same weak coloring, under testing by phloroglucine, as that designated under B, was rejected as not being 'free from wood fibre.'"

The editor of the *Zeitung* refers to the observation of Dr. Mueller, who found the same appearances, especially in paper made from soda or sulphite fibre, and attributes it to small quantities of incrusting components remaining in the cellulose. In low grades of fibre there was found of unreduced wood as much as 5.5 per cent.

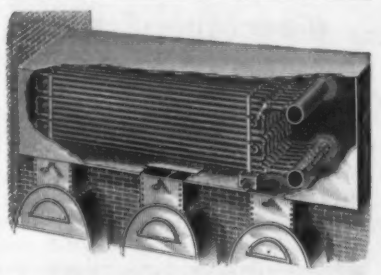
Pulp Straining Apparatus.

Two recent English patents refer to pulp strainers.

One relates to straining apparatus of that kind in which the pulp is drawn through the strainer plates by means of a pulsating action imparted to it, the strainer plates being fixed in a horizontal position in a shallow vat. The object is the production of this pulsating action by means of improved mechanism. Two openings are preferably formed in the bottom of the casings about 2 feet long and 1½ foot broad. On the edges of each of these openings a ribbon band is fixed, which is of a semicircular section with the convexity outward, thus acting like a spring, and having the upper and lower horizontal caps directed inward. The lower edge of the rubber band is fixed to the edge of the opening in the bottom of the casing by being gripped between it and an inner flat ring, fixed by screw bolts. The upper lip of the rubber band is likewise fixed to a plate, which is of the same shape as the bottom opening but larger; this plate is connected by a rod to a crank on a rotating shaft below. The rubber bands with the covering plates are in separate compartments covered by rubber sheets, which are beneath the strainer plates, and which equalize the pulsating action throughout the space beneath the strainer plates. The rest of the apparatus is constructed in the usual manner.

In the other instance the improvement applies to the apparatus where the pulp is drawn by means of a pulsating action through strainer plates fixed on the sides of a rotating casing, the pulp being fed through a hollow trunnion at one end of the casing. In this invention the rotating casing is made with three sides only instead of four as ordinarily formed. The rotation of the three sided casing may be effected by the usual means, or the gearing may be such that the motion is slower when each side is uppermost and horizontal than during the time when a slide is moving into that position.

The pulsating action is caused by a pump which acts on air through a hollow trunnion at the end, which is opposite to that at which the pulp is delivered. A casing, having rubber sides, is connected with this hollow trunnion, through which casing the pulsating action is communicated to the pulp inside the rotating strainer. For the prevention of water leaking into the interior of the pulsating casing, and so causing an imperfect action, small scoops are placed within the casing at certain points as far from the axis as possible, so that when a scoop is in its lowest position any water will drain into it, and by the rotation of the casing the water will run through a pipe attached to the scoop, and thence into the hollow trunnion with which the pipe communicates. The trunnion is so shaped internally that any water being delivered into it runs out of the end into a space beneath the pump, from which it can be withdrawn periodically through a stopcock.



A. S. HATCH, President.
S. D. BREWER, General Manager.

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Consulting and Practical Experts in all Matters Pertaining to Steam, and its Application to Power, Heat and Ventilation.

DESIGNING, REMODELING AND IMPROVING STEAM PLANTS IN MANUFACTORIES, STORES, OFFICE BUILDINGS, APARTMENT HOUSES, HOTELS, ETC.

Plans, Specifications and Estimates submitted for all classes of Steam Work and Appliances; and for the best methods of Economizing and Improving the various processes of Drying, Boiling, Evaporating, &c., by Steam Heat.

THE HUSSEY RE-HEATER

Re-heats Exhaust Steam; Super-heats Live Steam; Heats Air and Water without Cost for Fuel.

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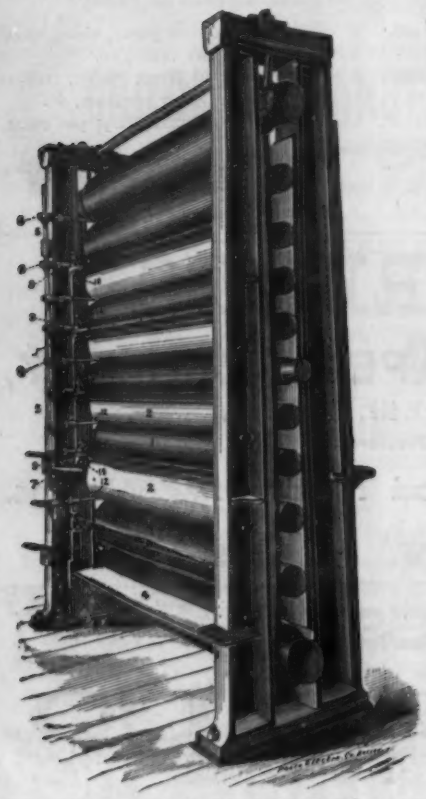
HEADQUARTERS FOR DRYER FELTING.

M. C. BROWNE,
Holyoke, Mass.,
MANUFACTURER OF
FIRST-CLASS SEALING WAX.
Especially for Paper Mills and Wholesale Paper Dealers.

SMITH'S PNEUMATIC CALENDER FEED.

Patented Sept. 29, 1885; Nov. 16, 1886; other Patents now pending. This Machine is also Patented in England, France and Germany.



Applied to Calender on the Machine.

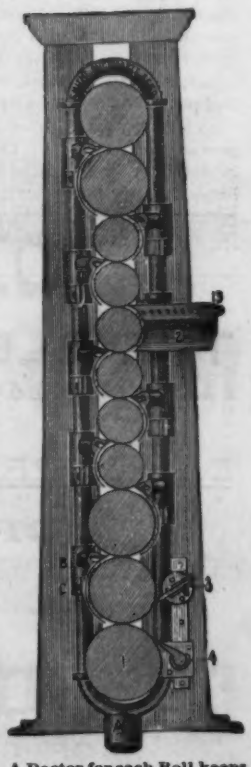
THE DANGER TO PAPER MACHINE TENDERS and the LOSS IN BROKEN PAPER at the CALENDER ROLLS MAKE THIS INVENTION OF ESPECIAL VALUE FOR THE REASONS THAT:

It prevents all danger and risk to the person of the operatives ordinarily incident upon leading the paper through the stack.
It avoids "making broken" in the stack, as the doctors prevent the paper from clinging to the rolls, and as the action of the doctors upon the individual rolls removes any and all calender spots from their surfaces, the latter are kept in perfect condition, thereby preventing defacement or injury to the paper, which would otherwise be the case; also by keeping the rolls clean, removing all dust and grit, the necessity for frequent grinding of the latter is avoided.
The blower or fan which supplies the air should be located in some place whence cold moist air can be obtained, and as this cold air is supplied through the doctors to the surface of the rolls, the latter are prevented from heating, and a better and more uniform surface is given to the paper.
In operation, the paper is introduced at the top roll and is conducted automatically between the other rolls, emerging from the bottom, and can be conducted immediately, without loss, to the reel.
Among Paper Manufacturers now using *Smith's Pneumatic Calender Feed,* all of whom endorse it most highly, are:

HUDSON RIVER PULP AND PAPER CO.,	Palmer Falls, N. Y. (5)	TICONDEROGA PULP AND PAPER COMPANY,	Ticonderoga, N. Y.
GLEN MANUFACTURING COMPANY,	Berlin Falls, Vt. (3)	JESSUP & MOORE PAPER COMPANY,	Philadelphia, Pa.
HAVERHILL PAPER COMPANY,	Haverhill, Mass. (2)	MARTIN & W. H. NIXON,	Manayunk, Pa. (3)
RUSSELL PAPER COMPANY,	Lawrence, Mass. (5)	WINNIPISEOGEE PAPER COMPANY,	Franklin, N. H. (4)
SUGAR RIVER PAPER COMPANY,	Claremont, N. H.	HERKIMER PAPER COMPANY,	Herkimer, N. Y.
MONTAGUE PAPER COMPANY,	Turner's Falls, Mass.	GEORGE H. FRIEND PAPER COMPANY,	West Carrollton, Ohio.
BRIDGEPORT PAPER COMPANY,	Bridgeport, Conn.	SPRING GROVE PAPER MILLS,	Spring Forge, Pa. (3)
LAKE GEORGE PULP AND PAPER COMPANY,	Ticonderoga, N. Y.	BRIDGE MILL PAPER COMPANY,	Pawtucket, R. I.
GEORGE W. WHEELWRIGHT PAPER COMPANY,	Fitchburg, Mass.	POWELL H. RAMSDELL, ARLINGTON MILLS,	Salisbury Mills, N. Y. (2)

Convincing testimonials as to the real merits and advantages of SMITH'S PNEUMATIC CALENDER FEED will be shown upon application.
The entire device is compact, readily adjusted, and enables large stacks to be easily and efficiently managed with least labor, and with but little or no loss of broken or damaged paper.

FALL MOUNTAIN PAPER CO.,
85 Water Street, BOSTON, OR Bellows Falls, VERMONT.



A Doctor for each Roll keeps off all Calender scabs.

The WAXED PAPER made under the Hammerschlag process will hereafter be known as

"HAMMERSCHLAG WAXED PAPER,"

and each package will be marked with the accompanying label:

HAMMERSCHLAG
WAXED PAPER.
TRADE MARK.
Manufactured under Letters Patent August 7, 1877; Reissued October 22, 1878; Letters Patent October 29, 1878; Letters Patent July 8, 1879.
THE HAMMERSCHLAG MFG. COMPANY,
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GARRETT & BUCHANAN, Philadelphia.
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FITCH, HUNT & CO., Chicago.
THE MERIAM & MORGAN PARAFFINE CO., Cleveland, O.
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NEW

AMERICAN TURBINE,

FROM SIX TO SIXTY-SIX INCHES DIAMETER,
Are in practical operation under heads from 4 to 100 feet head; are strong, durable, and give high efficiency.

BEATING ENGINES,

Cast-Iron or Wood Tubs,
Made heavy and strong, double lightered, with well-made Cone Washers.

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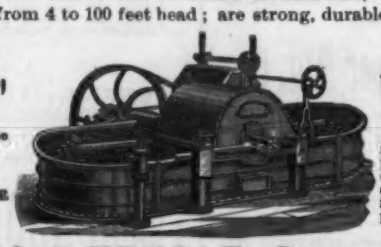

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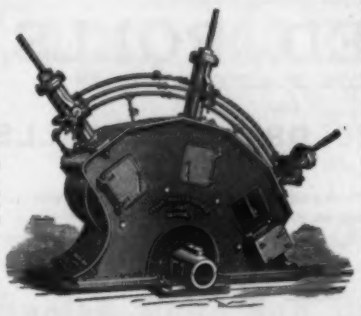
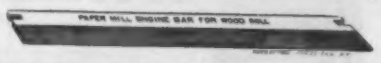
Wood Pulp Grinder.

Superior in construction to any made. Capacity, 2,000 to 3,500 pounds extra good pulp per day, dry weight. Hydraulic feeds, fine adjustments; strong and reliable in every way. Two and three pocket machines.

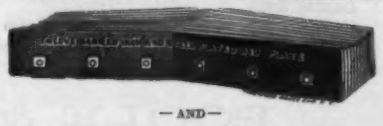


STOUT, MILLS & TEMPLE, Dayton, Ohio, U.S.A.

R. J. DOWD,
BELOIT, WIS.,
MANUFACTURER OF
Paper Engine Bars and Plates,



RAG CUTTER AND PAPER CUTTER **KNIVES,**



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Machine Knives of all kinds.

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—MANUFACTURERS OF—

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Fourdrinier and Cylinder Machines, Washing and Beating Engines,
Air-Drying Machinery for Drying Sized Papers.

SOLE MANUFACTURERS of the Jordan Patent Beating Engine, which has no rival for clearing the stock for fine papers. Chilled Iron and Paper Roll Super Calenders, Plate Calenders, Chilled Stack Calenders, Rag Cutters, Hand and Power Cutting Presses and Stop Cutters; the Hatch Patent Stop Cutter, the only cutter that can be regulated to cut between water-marks of writing papers. Screens, Brass and Nickel Plated, the latter warranted to wear twice as long as brass. Bed Plates, Roll Bars, Fan and Plunger Pumps.

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Electric Lighting and Transmission of Power.

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Agawam Paper Co., Mittineague, Mass.
Crane Brothers, Westfield, Mass.
Z. Crane, Jr., & Brother, Dalton, Mass.
Haverhill Paper Co., Haverhill, Mass.
Winona Paper Co., Holyoke, Mass.
Parsons Paper Co., Holyoke, Mass.
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Forest Paper Co., Yarmouthville, Me.
Richards Paper Co., Gardiner, Me.
S. D. Warren & Co., Gardiner, Me.
S. D. Warren & Co., Cumberland Mills, Me.
Sebago Wood Board Co., South Windham, Me.
Bardeen Paper Co., Otsego, Mich.
Western Indurated Fibre Co., Winona, Minn.
Train, Smith & Co., Bristol, N. H.
Glen Mfg. Co., Berlin Falls, N. H.
The Ondawa Paper Co., Middle Falls, N. Y.
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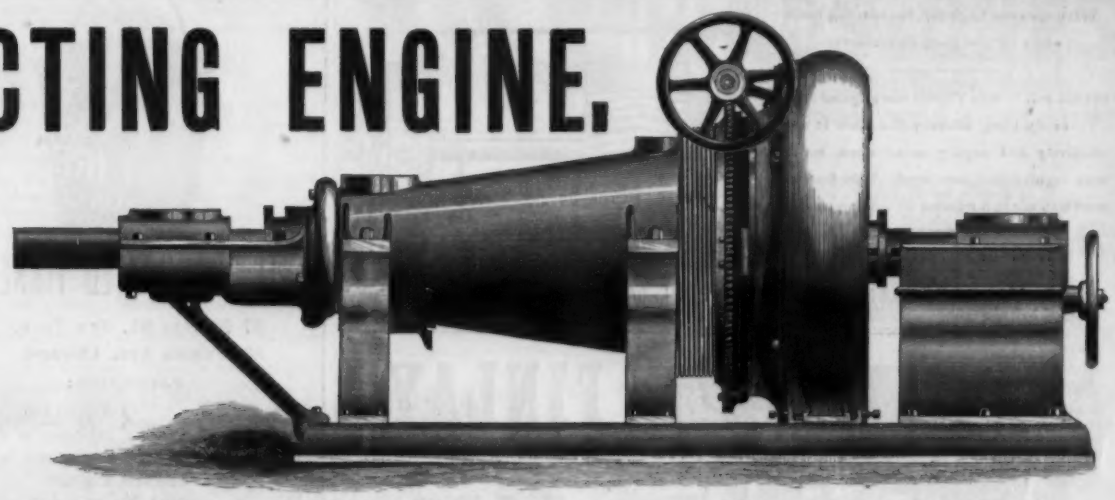

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ALL FELTS GUARANTEED TO RUN WELL, OR THEY CAN BE RETURNED.
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All the above we offer to Paper Makers at the lowest wholesale prices, in quantities to suit.
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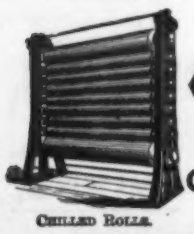

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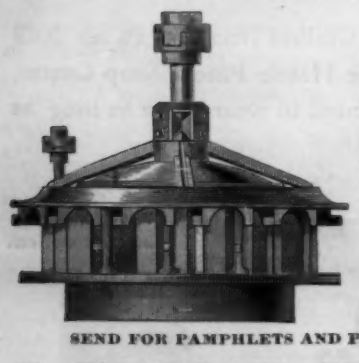

This Wheel is strong and durable. Excelled all other wheels in the great trial tests. Is in use all over the nation. I also make a specialty of

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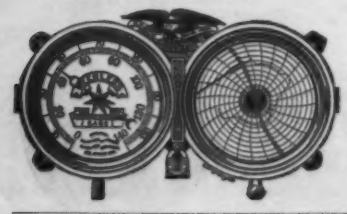

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With Geared Lighter, for raising both ends of the Roll-Shaft alike.

THE roll in this Engine has angular knives or fly bars, whereby the stock is more effectively and rapidly acted upon, making more regular and even stuff. This improvement is in use in a number of leading mills.

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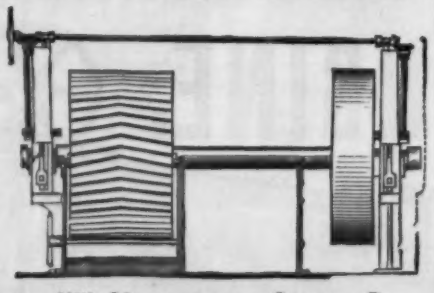

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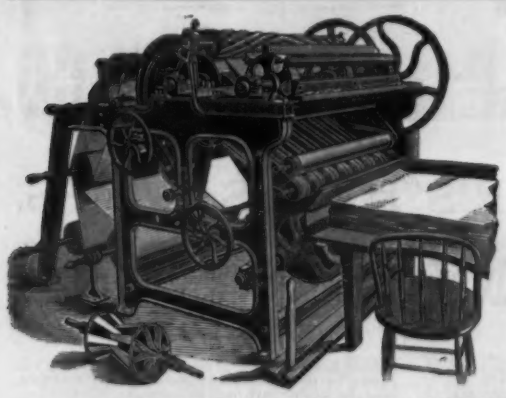

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Soda Ash, Sal Soda, Caustic Soda, Bleaching Powders.

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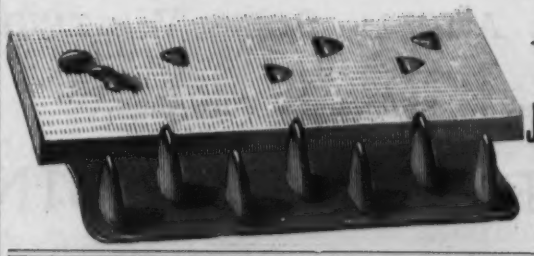

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LIBMANN, JOSEPH, & CO., New Rags a Specialty. 158 South Fifth ave., N. Y.

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McKEON, JAMES F., Paper and Paper Stock. 246 Bedford Avenue, Brooklyn, E. D.

McQUADE, ARTHUR J., 535 & 537 E. 13th st., N. Y.

METZ, PHILIP, 49 Ann Street, New York.

O'MEARA, M., 277 Water st., N. Y.

OVERTON, R. H., 8 Reade st., N. Y.

PEYTON, R., & CO., Paper and Paper Stock, 56 Thomas st.

ROZÉS BROTHERS, Tribune Building.

RUSSELL, JAS. H., successor to M. RUSSELL, 30 City Hall Place, New York City.

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BULKLEY, RAIGUEL & CO. (Late with J. G. Ditman & Co.), 22 South Fifth and 300 and 302 Minor st., Philadelphia.

BUTLER, THOMAS, Cotton and Woolen Rags, Iron and Metals. 249 Causeway st., Boston, Mass.

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ELLIOT, A. G., & Co., Paper and Paper Stock, 32 and 34 South Sixth st., Philadelphia.

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IMPORTS AT NEW YORK.

FOR THE WEEK ENDED JUNE 22, 1888.

An. Colors..	287	$18,621	Paper.....	442	$28,567
Alum.....	—	—	Steel Pens...	5	5,246
Alum'a Cake	—	—	Stationery...	7	362
Bl. Powders.	621	10,954	Slate Pencils	933	1,159
Soda Ash...	1,987	29,019	Clay.....	—	1,950
Soda, Caus..	1,235	12,079	Jute Butts...	9,454	45,924
Soda, Sal....	1,072	2,397	P. Hangings	19	1,526
Ultramarine.	41	501	Paper Stock.	1,776	14,986
Books.....	224	24,236	Terra Alba..	1,556	701
Newspapers.	70	4,867	Waste.....	46	4,391
Engravings.	38	4,106	Wood Pulp..	1,816	8,418
Ink.....	12	400			
Lead Pencils	11	1,791	Totals....	20,972	221,501

Imports General Merchandise for the week ended June 22, 1888..... $6,627,492

IMPORTS OF PAPER STOCK AT NEW YORK.

JANUARY 1 TO JUNE 26, 1888.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria....	1,183	—	—	—	—
Amsterdam....	—	—	42	—	—
Antwerp.....*a*	782	380	776	—	1,631
Arundel.....	—	—	—	300	—
Bordeaux.....	1,062	—	—	—	60
Bremen.....*b*	2,824	62	—	—	1,720
Bristol.....	—	—	—	—	1,999
Calcutta.....	—	—	—	—	7,142
Christiania...	—	—	2,003	2,518	666
Copenhagen...	131	—	1,170	1,468	—
Dundee.....	130	1,084	—	—	9,949
Fiume.....	—	—	79	—	—
Geestemünde.	86	—	—	—	234
Genoa.....	300	—	—	—	1,409
Glasgow.....	121	784	—	—	—
Gothenburg...	139	10	815	443	456
Hamburg.....	1,061	139	12	—	657
Havre.....	10	—	—	—	240
Hiogo.....	5,147	—	—	—	—
Hull.....*c*	6,949	932	2,257	381	5,621
Leghorn.....	2,560	—	—	—	—
Liverpool....*d*	1,163	1,286	53	—	9,982
London.....*e*	9,946	6,496	1,159	528	11,723
Marseilles....	430	36	—	—	894
Newcastle.....	—	—	419	—	1,079
Newport.....	—	—	—	—	320
Pillau.....	2,059	—	—	—	43
Rotterdam....	—	89	36	—	474
Stettin.....	2,392	63	1,944	811	607
Swinemünde.	434	84	447	—	243

a. Including 64 bs. flax waste and 152 bs. cotton waste.
b. Including 141 bs. cotton waste.
c. Including 841 bs. cotton waste and 375 bs. flax waste.
d. Including 135 bs. cotton waste.
e. Including 188 bs. cotton waste and 553 bs. flax waste

NEW YORK IMPORTS.

FROM JUNE 19 TO JUNE 26, 1888.

Paper Stock.

Lewy Brothers, Chateau Lafitte, Bordeaux, 74 bs. rags.

Train, Smith & Co., Windsor Park, Calcutta, 1,500 bs. manillas.

Norwegian Wood Pulp Company, Thingvalla, Christiania, 161 tons chemical fibre, 188 tons wood pulp.

A. Wertheim & Co., by same, 56 tons chemical fibre.

James Pirnie, by same, 50 tons chemical fibre.

John H. Lyon & Co., by same, 32 tons chemical fibre, 161 tons wood pulp.

R. H. Overton, by same, 55 tons chemical fibre.

M. A. Ring, Jr., Critic, Dundee, 173 bs. papers.

R. H. Overton, by same, 244 bs. manillas, 142 bs. papers, 45 bs. jute thread, 41 bs. bagging.

Neumark & Gross, by same, 212 bs. manillas.

J. L. Taylor, by same, 446 bs. manillas.

Atterbury Brothers, Mariannina, Genoa, 143 bs. bagging.

A. Wertheim & Co., by same, 196 bs. manillas.

Atterbury Brothers, Armonia, Genoa, 397 bs. bagging.

Atterbury Brothers, Felicinia Ferrari, Genoa, 112 bs. bagging.

John H. Lyon & Co., Galileo, Hull, 50 tons chemical fibre.

R. H. Overton, by same, 149 bs. papers.

James Pirnie, by same, 89 bs. bagging.

Perkins, Goodwin & Co., by same, 206 bs. rags.

Lewy Brothers, by same, 217 bs. rags.

Aug. Smith & Co., Buffalo, Hull, 344 bs. rags.

Norwegian Wood Pulp Company, by same, 10 tons chemical fibre.

James Pirnie, by same, 52 bs. bagging, 29 tons chemical fibre.

M. A. Ring, Jr., by same, 20 tons chemical fibre.

John H. Lyon & Co., by same, 60 tons chemical fibre.

E. Hatton & Co., by same, 27 bs. rags.

C. Plummer, by same, 133 bs. cotton waste.

Atterbury Brothers, by same, 55 bs. bagging.

J. W. Lyon & Co., City of Chicago, Liverpool, 30 bs. papers.

J. L. Taylor, by same, 41 bs. manillas.

Neumark & Gross, Italy, Liverpool, 148 bs. manillas.

M. A. Ring, Jr., St. Ronans, Liverpool, 19 bs. bagging.

J. W. Mason & Co., by same, 226 bs. manillas.

Perkins, Goodwin & Co., by same, 605 bs. manillas.

Train, Smith & Co., by same, 131 bs. papers.

R. F. Downing & Co., by same, 29 bs. papers.

John H. Lyon & Co., Denmark, London, 16 bs. rags.

A. Wertheim & Co., Helvetia, London, 223 bs. rags, 32 bs papers, 115 tons chemical fibre, 90 bs. manillas.

R. H. Overton, by same, 260 bs. rags, 62 bs. flax waste, 100 bs. papers.

James Pirnie, by same, 442 bs. bagging.

Neumark & Gross, by same, 509 bs. manillas.

Train, Smith & Co., by same, 199 bs. rags.

Stephen Lee, by same, 232 bs. rags.

J. W. Mason & Co., by same, 563 bs. manillas.

Neumark & Gross, Cheribon, Marseilles, 131 bs. manillas.

Atterbury Brothers, Sven, Marseilles, 146 bs. rags.

Lewy Brothers, Competitor, Pillau, 1,272 bs. rags.

M. A. Ring, Jr., Slavonia, Stettin, 25 tons chemical fibre.

R. H. Overton, by same, 33 tons chemical fibre.

A. Wertheim & Co., by same, 257 tons chemical fibre.

Paper.

Merchants' Dispatch Company, Rhyniand, Antwerp, 3 cs.

W. P. Dane, by same, 16 cs.

W. Botterling, by same, 8 cs.

John A. Norman, by same, 4 cs.

A. H. Abbott & Co., by same, 6 cs.

Thayer & Chandler, by same, 7 cs.

Kaufmann & Strauss, Trave, Bremen, 3 cs. colored.

Kaufmann & Co., by same, 5 cs. colored.

W. Wallace & Co., Galileo, London, 2 cs. hangings.

Merchants' Dispatch Company, by same, 4 cs.

Davies, Turner & Co., Adriatic, Liverpool, 5 bs.

A. A. Goldsmith, Trave, Bremen, 1 cs.

E. Fougera, Chateau Lafitte, Bordeaux, 50 cs.

Henry Allen, by same, 8 cs.

Luyties Brothers, by same, 1 cs.

Hermann Isaac, by same, 50 cs.

R. F. Downing & Co., Apenrade, Hamburg, 1 cs.

Philip Bauer, by same, 1 cs.

Eimer & Amend, Bohemia, Hamburg, 1 cs.

Henry Griffin & Co., by same, 6 cs.

G. Gennert, by same, 5 cs.

W. Wallace, by same, 2 cs.

Dingelstadt & Co., by same, 62 cs.

B. Lawrence Stationery Company, by same, 24 cs.

E. & H. T. Anthony & Co., by same, 14 cs.

Roux & Co., La Bretagne, Havre, 1 cs. hangings.

Herter Brothers, by same, 1 cs. hangings.

W. Wallace, by same, 2 cs. hangings.

Hermann Isaac, by same, 22 cs. hangings.

F. J. Emmerich & Son, by same, 2 cs. hangings.

H. Warwick, by same, 6 cs. hangings.

C. H. George, by same, 1 cs. hangings.

Keuffel & Esser, by same, 1 cs.

Willy Wallach, Rugia, Hamburg, 22 cs.

A. Wittemann, by same, 1 cs. colored.

EXPORTS of Paper, &c., from New York for the Week Ended June 26, 1888.

BOOKS, cases, to Liverpool, 20; to London, 23; to Central America, 2; to United States of Colombia, 5; to Bremen, 3; to British West Indies, 3; to Havre, 5; to Argentine Republic, 1; to Chili, 2; to Danish West Indies, 1; to Japan, 4; to Mexico, 3; to Newfoundland, 2; to Uruguay, 3.

PAPER, to Cuba, 635 cs., 3,200 rms.; to British West Indies, 1,260 rms.; to London, 6 cs.; to Mexico, 32 pkgs., 50 rms.; to United States of Colombia, 46 pkgs.; to Central America, 18 pkgs., 60 rms.; to Brazil, 3,000 rms. 5 cs., 10 pkgs.; to British Australasia, 18 cs.; to Bremen, 1 cs.; to Dutch West Indies, 10 rms.; to Hamburg, 2 cs.; to Argentine Republic, 101 cs.; to Peru, 7 cs., 5 pkgs.; to San Domingo, 41 pkgs.; to British Honduras, 195 rms.; to Chili, 18 cs.; to Copenhagen, 12 bdls.; to Hull, 4 cs.; to Havre, 3 cs.; to Hayti, 14 pkgs., 1 cs.; to Liverpool, 1 cs.; to Newfoundland, 48 pkgs.; to Nova Scotia, 10 bdls., 7 cs.; to Uruguay, 5 cs.

STATIONERY, cases, to Liverpool, 32; to London, 5; to Cuba, 16; to Mexico, 16; to Bremen, 2; to Hayti, 3; to Peru, 2; to United States of Colombia, 4; to Japan, 8; to Argentine Republic, 1; to Chili, 23; to Central America, 8; to Dutch West Indies, 1; to Dutch East Indies, 1; to Havre, 9; to San Domingo, 7; to Brazil, 7; to Ecuador, 2; to Hull, 2; to Hamburg, 1; to Newfoundland, 2; to Nova Scotia, 17; to Uruguay, 2; to Venezuela, 4.

AGGREGATES AND VALUES.

Paper, reams..	7,775	$1,591
Paper, pkgs.	214	2,122
Paper, cases.	814	8,658
Books, cases.	85	6,996
Rosin, bbls.	5,568	11,752
Stationery, cases	263	12,137
Totals.	14,719	$43,256

Exports General Merchandise for the week ended June 26, 1888..... $4,855,164

BOSTON IMPORTS.

FROM JUNE 21 TO JUNE 27, 1888, INCLUSIVE.

Books.

Carl Schoenhof, Cephalonia, Liverpool, 2 cs.

Houghton, Mifflin & Co., by same, 2 cs.

Estes & Lauriat, by same, 1 cs.

American Express Company, by same, 1 cs.

George Polley & Son, by same, 1 cs.

Cupples & Hurd, Manitoban, Glasgow, 2 cs.

Paper, &c.

Frost & Adams, Cephalonia, Liverpool, 1 cs. paper.

Forbes Lithograph Company, by same, 1 cs. labels.

A. H. Rolfe & Co., by same, 5 bs. periodicals.

Hooper, Lewis & Co., Borderer, London, 3 cs. stationery.

H. Heyer & Co., by same, 3 cs. albums.

Paper Stock.

Train, Smith & Co., Borderer, London, 504 bs. rags.

Horace Dutton, by same, 216 bs. rags, 167 bs. manillas, 222 paper stock.

S. D. Warren & Co., by same, 150 bs. rags.

Crocker, Burbank & Co., by same, 240 bs. paper stock.

C. P. Sumner, by same, 62 bs. paper stock.

T. F. Ring, by same, 36 bs. paper stock.

Stephen Lee, by same, 377 bs. rags, 73 bs. paper stock.

M. A. Ring & Sons, by same, 95 bs. paper stock.

W. A. Castle, by same, 53 bs. rags.

S. W. Wilder, by same, 79 bs. paper stock.

Train, Smith & Co., Manitoban, Glasgow, 138 bs. paper stock.

T. F. Ring, by same, 31 bs. manillas, 71 bs. paper stock.

Harvard Mills Company, by same, 83 bs. paper stock

John T. Lodge & Co., by same, 130 bs. paper stock.

S. W. Wilder, by same, 61 bs. paper stock.

Atterbury Brothers, by same, 70 bs. paper stock.

Wood Pulp.

Rice, Kendall & Co., Carroll, Halifax, 194 bs.

Bleaching Powders.

J. L. & D. S. Riker, Cephalonia, Liverpool, 178 cks.

Refined Alkali.

J. L. & D. S. Riker, Cephalonia, Liverpool, 73 cks.

Resin.

Curtis, Davis & Co., City of Macon, Savannah, 130 bbls.

Order, by same, 250 bbls.

ESTABLISHED 1845.

MARTIN ROURKE & CO.,

MANCHESTER.

PACKERS AND SHIPPERS OF

MANCHESTER GUNNY BAGGINGS,

Cotton Wastes and Paper Stock.

Trentham Street Mills, Chester Road, Manchester, Eng.

TRAIN, SMITH & CO.,

IMPORTERS OF AND DEALERS IN

—ALL DESCRIPTIONS OF—

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24 FEDERAL STREET, BOSTON.

BRANCH OFFICES: 36 BEEKMAN STREET, NEW YORK. 21 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

BARLOW & CO.,

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Woolen Rags and Paper-Makers' Supplies,

237 and 239 South Street, and 66 and 68 Utica Street,

BOSTON, MASS.

WOOLEN RAGS GRADED IN COLORS AND QUALITY.

ROZÉS BROTHERS,

—PACKERS AND SHIPPERS OF—

RAGS AND PAPER STOCK

OF EVERY DESCRIPTION.

Agen (France).

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General Chemical Analyses *made with accuracy and dispatch, and special attention given to Paper Mill Work.*

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103 MILK ST., BOSTON.

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No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.

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Jacketing, Roll Cloth, Double Extra Canvass, Ultramarine Blue.

ESTABLISHED 1827.

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IMPORTED GRINDSTONES for GRINDING WOOD PULP A SPECIALTY.

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The Paper Trade Journal.

DEVOTED EXCLUSIVELY TO THE INTERESTS OF

The American Paper Trade.

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Single Copies, . . . 10 Cents

HOWARD LOCKWOOD & CO.,
Publishers.

HOWARD LOCKWOOD. WILLIAM P. HAMILTON.

NEW YORK: SATURDAY, JUNE 30, 1888.

THE JOURNAL contains the latest and fullest information relative to the paper trade in all parts of the world, including descriptions of new appliances and processes for making paper, experiments with new fibres and other materials, a record of the water supply, with the latest manufacturing news in all parts of the country. It gives the cream of all the foreign technical journals which relate to the paper interest, besides communications from competent persons in the trade, both at home and abroad. The market review and quotations show the state of trade in all the principal cities, and no pains have been spared to make these accurate and complete.

Advertisements cannot be received for insertion in the current week later than 9 A. M. on Friday. The charge for advertising is 25 cents a line, each insertion. Special terms for standing and displayed advertisements to be had on application. Card in Directory Column and one copy of paper, $15 a year.

Subscription per annum and postage for Great Britain..... £1
Subscription and postage for France, per annum..... 25 francs
Subscription and postage for Germany, per annum..... 24 reichsmark

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Payment for subscriptions or advertising may be made by express money-order, draft, post-office order or registered letter.

All communications must be addressed to

HOWARD LOCKWOOD & CO.,
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126 and 128 Duane Street, N. Y.

CABLE ADDRESS: Catchow, New York.

BRANCH OFFICES.

Western Office—W. A. CARROLL, General Manager, 174 LA SALLE ST., CHICAGO, ILL.

Boston Office—A.L. DELESDERNIER, General Manager, 330 DEVONSHIRE ST., BOSTON, MASS.

FOREIGN GENERAL AGENTS.

M. P. McCoy	Subscription Agent for the United Kingdom, 7 Water Lane, Ludgate Circus, London.
Elfwing & Co.	Stockholm, Sweden.
John L. Sprague	Gibraltar, Spain.
Leonardo Pardo	Vigo, Spain.
C. Galvagno	Turin, Italy.
S. Bernard	Venice and Florence, Italy.
W. & P. Shepherd	Leghorn and Genoa, Italy.
J. H. de Bussy	Amsterdam, Holland, and the Dutch East Indies.
Gordon & Gotch	Melbourne and Sydney, Australia.
R. T. Wheeler	Dunedin, New Zealand.
W. Snelling	Brisbane, Queensland.
A. G. Webster	Hobart Town, Tasmania.
Knight & Co	Newchwang, China.
I. D. Clark	Shanghai, China.
Sargent, Farsari & Co.	Yokohama, Japan.
Camilo Garcia	Puntas Arenas, Costa Rica.
Caine y Carricaburu	Havana, Cuba.
Seymour Keeler	Valdivia, Chili.
Jose A. Barros	Barranquilla, Colombia.
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Edward Grauert	Montevideo, Uruguay.
Bethencourt e hijos	Curaçoa, W. I.
J. O. Ryder	Tamatave, Madagascar.
I. J. Conen de Lima	Port Louis, Mauritius.
Joaquin G. Castilla	Tampico, Mexico.
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American Stationer,	" Thursday,	2.00
American Bookmaker,	Monthly,	2.00
Lockwood's Directory of the Paper and Stationery Trades,	Annually,	2.00

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HOWARD LOCKWOOD & CO.,
126 & 128 DUANE ST., NEW YORK.

WE observe that it has been determined to retain the duty on wood pulp which the pending tariff bill first proposed to remit. This is desirable, but it is not the only thing on which the paper making interests of the country ought to be consulted. The equalization of duties recently suggested in these columns ought to be provided for and the existing duties on paper should not be lowered.

LOCKWOOD'S Directory for 1888-9 is just out, and is replete with information as to the paper and pulp mills of the United States and Canada. Its data were revised up to the latest moment prior to publication, and as a result it contains all of the information which it was possible to supply. Its publishers notify subscribers that the work will be delivered according to the date of the reception of orders, and those who wish to secure copies but have not made their wants known will need to be prompt in communicating their requirements.

OUR first page illustration this week is of a suction box affixed to the machine immediately preceding the couch rolls and taking the place of the usual guide roll at that point. It will be seen that this suction box is stationary, but is provided with a rotating perforated shell. Of the performances or advantages expected to result from the use of this box we have no knowledge. It is a new application—and, we believe, a new form—of the "revolver," concerning which a number of correspondents have written to THE JOURNAL in times past and about which there has been considerable controversy. While we think of it, we wish to suggest to the several inventors who from time to time have proclaimed the virtues of a revolving suction box, and have asserted their successful application of the principle, that the paper trade are waiting for the fulfillment of their promises.

THE secretary of the American Paper Manufacturers' Association recently addressed the following questions to the paper manufacturers:

First—How much capital did you employ in plant and business in the manufacture of paper during the year 1887?

Second—What was the amount of your product in pounds, also the value of the same, during that year?

Third—To how many hands did you give employment during that year?

Fourth—What was the aggregate amount you paid for wages in that year?

These inquiries were sent out for the purpose of obtaining definite information which can be made available in the discussion of matters of special interest to the trade. We are informed that very good returns to the questions have been made; but some of the manufacturers have not responded, and it is requested that those who have not replied shall do so as soon as possible, under the assurance that the information given will be held in strict confidence and that aggregates alone will be presented at the meeting of the association.

APROPOS of the outcry against the expected outcome of the pending copyright bill in its relation to English interests, we find that in a line of publications now being offered in this country stress is laid upon the fact that the works are printed in England and upon English paper. This ought to be reassuring to the unduly excited Britons, who see in the Chace bill a menace to their industries. But, on the other hand, it may serve to increase the opposition, for, it may be argued, the evidence goes to show that without copyright, and despite the tariff, English publications find lodgment without going through the mill of the American publisher. Just why such a point should be made of English printing and English paper we cannot conceive. This may present an inducement to some of our public officials and to those persons who spell tariff re'orm with a big R and work it out backward and with a small letter; but to the mass of the American public this sort of presentation is neither convincing nor seducing. We should be loth to exchange our fine presswork for the outcome of British pressrooms, and as for paper there in nothing made in Great Britain on which effects can be produced as on the paper turned out from American mills. There has been frequent complaint that the English mills do not make book papers like the American; but this has been answered by the statement that the English printers for the most part will not use and do not demand them. Conceding this, what is the special feature of British printing? We have yet to see that it possesses extraordinary claims to consideration.

MEMBERS of State legislatures and of Congress, governors of States and holders of many other responsible positions have been selected from time to time by different constituencies from the ranks of the paper trade, and we can point to a number of paper makers who are to-day doing good and honorable service in the various branches of public administration. There is a fitness in this. When the importance of the paper making interest and its valuable service to the advancement and enlightenment of the age are taken into account, it seems to be perfectly in accord with reason that the men who have helped to develop that interest should be called upon to aid further in promoting good government. We therefore welcome every suggestion which puts an intelligent and capable paper manufacturer to the front, not as the exponent of particular political principles, but as the representative of intelligence and advanced ideas. Two such suggestions are before us, and we trust that when acted on favorably, as we hope they will be, the persons to whom they apply will receive the hearty support of the constituencies whose suffrages they may seek. We refer to Warner Miller, of New York, and William Whiting, of Massachusetts, each of whom has been prominently mentioned in connection with the chief executive office of their respective States.

So many fallacies attach to the doctrine of free trade, or that verbal modification of it known as a tariff for revenue only, that it would require a volume to place them all side by side and expose their features. It has more than once been shown that the application of this much vaunted economic doctrine in Great Britain is in many respects a veritable sham; but still the free traders go on appealing particularly to the farming population on the ground that a protective tariff is destructive to their interests and to the workingmen in that it unduly advances the cost of the necessaries of life. The latter have begun to understand fairly well that competition which deprives them of work or leads to a reduction of wages is a natural result of free trade; but the agriculturists have not—except in special instances—realized to what length this British economic doctrine can go. Take one agricultural product for which the United States is famous and compare the conditions by which it is bound and burdened in the United Kingdom. This product is tobacco. The English customs duty on leaf tobacco is 85 cents and on manufactured tobacco $1.25 per pound. It might be thought that, with such protection, the farmers of the United Kingdom, were their soil and climate favorable, could undertake the cultivation of the tobacco plant to advantage. But no; they are forbidden. Tobacco can be raised in the United Kingdom, and it is said that the soil of Ireland is particularly adapted to it. Why, then, is such a valuable crop neglected? It is because under the statutes of Great Britain it is a penal offense to raise tobacco, and fine and imprisonment are inflicted upon any farmer guilty of growing the plant. In a case like this, where a customs duty is collected, the free trade principle, it seems, can only be carried out by protecting the foreign producer at the cost of the Irish farmer, a retroversive process which may seem to some an efficient and desirable economic idea, but one which we think is destructive of the liberty of the citizen.

Watermarks.

BY DANDY.

There seems to be considerable coincidence of opinion in regard to the status of that member of the trade whose estate is in the hands of the public administrator and whose vested rights have been under legal scrutiny. Indeed, the testimony published in THE JOURNAL last week has rather tended to excite doubt where none had existed, and to cause further discredit upon the report of Mr. Scott's death in the minds of those who were not disposed to accept it.

"Nature abhors a vacuum," and I suppose therefore that inventors keep on trying to perfect vacuum apparatus for the purpose of throwing extra labor on nature. This is about the size of it, and the more abhorrent the thing becomes so much the more useful and desirable it is expected to prove. This seems rather queer. Some people think that we ought not to fight against nature, and others hold the opposing opinion, and sometimes both sides change positions like the nines on the diamond field.

But the apparatus described last week is, I perceive, specially designed for the use of chemical fibre manufacturers who hold to ancient faith and tradition and believe in soda straight.

I do not know who first suggested the application of the multiple effect to the evaporation of alkaline liquors. I do not think that the inventor of the apparatus now in use in this country had it in mind; but now that he has got started in this direction he evidently means to make his calling and election sure.

Noting the reference by one of your correspondents to the use of petroleum for firing, I would like to ask some of the chemical experts if there is not a considerable quantity of residuum left over from the distillation of crude oil which is available for use as fuel and can be had cheap. As I am not posted, and think that probably many others are equally unlearned, an answer to this inquiry would be appreciated. Possibly there are better uses for whatever may remain after the refining is done.

This suggestion of petroleum brings to mind the fact that Wyoming Territory is said to be the coming great oil field of the United States. In a recent and long report on the petroleum of that remote and little known section it is stated that as a lubricant the Wyoming oil is of superior quality and the finest in the world; "even the residues in the retort may serve for pitch, fuel or lubricators for heavy machinery. Everything in the oil is of value; nothing goes to loss."

Now when we consider the immense wealth of our Western territory, not only in precious metals, but also in ready made articles of commerce, such as soda, oil and I don't know what not else, it seems to be plain that there is no end to the wealth of this country, and that the saying "Westward the star of empire wends its way" is as absolutely truthful as poetical.

A commercial traveler who has been through the West, visiting the paper mills in that section of the country, tells of a few things which he saw.

He says that the mills are all filled up with bleach; that they have all made contracts for this article at guaranteed prices, and that in a month's run he did not sell a cask.

Then, again, he says that the tariff agitation is raising trouble and that people are getting into shape so as to be able to take care of themselves if the Mills bill should become a law. He says that stocks are being reduced as low as possible, and that in every way manufacturers are getting matters in as snug shape as they possibly can.

Judging from the reports which come in, foreign producers are the only ones whom this "ill wind" of the Texas statesman favors.

Ever since November 1 last the demand for news paper has been active, and as this is essentially a political year the demand is likely to be sustained right through into cold weather. Some of the daily papers are preparing for emergencies and are laying in stocks ahead of present wants.

They do not propose to be caught short, as some of them were at one time this year.

A New York paper mill agent had a peculiar counterfeit half dollar given him in change a few days ago. It is a "double header," that is to say, it represents a 50 cent coin with a head on each side, one date being 1876 and the other 1877. He feels cheap at being taken in by so mean a swindle, but finds consolation in the fact that it is a good coin with which to "match."

It is a sort of a "heads-I-win-and-tails-you-lose" pocket piece.

Here's another rise. The coal agents of the various coal carrying roads gave notice on Thursday that on and after July 1 the rates on interior and Western business would be advanced an average of 25 cents a ton, and that on and after July 15 the price at tidewater would be increased 15 to 25 cents a ton. That's it. Everything going up except paper.

Even the thermometer is or has been going up, and pinning his faith in the showing made by that instrument a paper stock man rushed his family off to a watering place down on the Jersey coast.

When last heard from all hands were wearing overcoats and heavy wraps and making frantic efforts to keep warm.

There has been some talk of "big runs" recently. I know of a mill which made and finished in twenty-four hours 21,222 pounds of ordinary news, the product of a 108 inch wire. How is that?

By the way, I see that in one of the mills mentioned in the testimony reported last week, "the main shaft under the pulping engines had two shafts and three water wheels, and at the end shaft there was connected a Corliss engine of 180 horse power, and when the water was low in the stream the steam engine turned the water wheels, and when the water was high in the stream the water wheel turned the steam engine."

That ought to have satisfied almost anybody, but I don't believe that it would receive the approval of "Millwright," "Super," "Old Man," &c. I wonder what they would say about it?

And then there was a finishing room, "built without any door to take the paper out of when it was finished."

Well, if there wasn't a door how did they get the paper into the room? And if they didn't get it in nobody need worry about not getting it out. But, then, there is no pleasing some people!

I always supposed that appointments in the post office were made by high Government officials, but I am mistaken. At least I judge so from the fact that I saw a paper maker making an appointment in the New York post office the other day, or may be he was only jotting down a few facts as to the woman's rights movement.

Trade Talks.

Theodore Molleson, of Molleson Brothers,—Trade is quiet, and this is about the condition of affairs in all branches of the paper trade. There is very little stirring. Prices, however, are very steady, and there are no changes of moment. I have not heard of any agreement of the manilla men to shut down.

Wellington Smith, of the Smith Paper Company, Lee, Mass.—No, the 80 per cent. required to signify their intention to abide by the agreement to shut down has not been obtained, and the shut down is not yet a fact. There would be no trouble in securing the wished for percentage, but some other matters have come up which have caused some of the manufacturers to withhold their consent.

Communications.

Sorghum Bagasse.

BOSTON, June 23, 1888.

To the Editor of The Journal:

We have noticed several inquiries in THE JOURNAL regarding the value of sorghum bagasse as a paper making material, and as we have investigated the matter to some extent we send you a portion of our results in the hope that they may be of interest. You will be able to judge of the quality of the fibre from the sample inclosed, which is part of a lot pulped in our laboratory and partially bleached. As you will see, the fibre is short, but seems to possess good felting properties. The yield is small, being only about 25 per cent. on a dry basis, and the raw material is so bulky that enough could hardly be put in the digester to make the boiling operation profitable. There seems also to be an unavoidable and rather large number of black specks from seed hulls, &c., which would still further lessen its value. GRIFFIN & LITTLE.

Changes, Removals and New Firms

A. Horvets, stationer, &c., Coleman, Tex., has sold out.

Lehr & Lastinger, job printers, Waco, Tex., have dissolved partnership.

Henry J. Ivison, bookseller and stationer, Auburn, N. Y., has sold out.

Converse & Carter, printers, Spencer, Mass., have dissolved partnership.

Wing, Burleigh & Wing, publishers, Waterville, Me., have dissolved partnership.

C. J. Case, bookseller and stationer, Avalon, Mo., has removed to Carrollton.

Vanderworker & Rundell, publishers, Minneapolis, Minn., have dissolved partnership.

Moran & O'Brien, dealers in paper hangings, Fitchburg, Mass., have dissolved partnership.

Boree & Crawshaw, dealers in paper hangings, Minneapolis, Minn., have dissolved partnership.

The *Express* Publishing Company and James F. Gaulin, bookseller and stationer, Du Bois, Pa., have been burned out.

J. A. Logan & Co., printers, Fort Worth, Tex., have been succeeded by the Texas Printing and Lithographing Company.

W. H. Graenhalgh has succeeded Thomas G. Thrum as importing bookseller, stationer, &c., at Honolulu, Hawaiian Islands. He solicits American consignments.

Failures.

J. M. Lafolly, printer, Stockton, Me., is in insolvency.

Held & Whitehead, stationers, Henderson Ky., have made an assignment.

Augustus D. Quealy, bookseller and stationer, Logansport, Ill., has made an assignment.

Pierce & Crumbacker, dealers in paper hangings, Huntsville, Ala., have been closed by the sheriff.

The assets of the Armstrong & Knauer Publishing Company, Limited, No. 822 Broadway, New York, were sold out by the sheriff on Wednesday. The company was incorporated in April, 1886, with an authorized capital of $50,000, and published a directory of manufacturers of the United States.

A meeting of the creditors of D. W. Glass & Co., stationers and printers, Baltimore, Md., was held at the office of the trustee, J. Pentland Brown, on the 27th inst. About $38,000 in claims were represented, most of the New York, Chicago and other out of town creditors by attorney. The total assets of the firm, as represented by invoices, were $41,146.08; total liabilities, $73,616.44. Among the creditors are: Boorum & Pease, $7,986.80; Mount Holly Paper Company $6,645.10; White, Corbin & Co., $5,989.08;

Roaring Springs Blank Book Company, $1,800.40; J. B. Sheffield & Son, $3,600; W. H. Evans, $5,869.53; W. G. W. Graham, $3,554.96; Koch, Sons & Co., $2,951.59; E. Faber, $2,613.31; Raphael Tuck & Sons, $1,572.06; G. W. Hill, $1,296.47; Saugerties Blank Book Company, $800; American Lead Pencil Company, $601.79; H. H. Hunt & Co, $1,371.90; Whiting Paper Company, $1,355.56; Willy Wallach $1,094.46; Obpacher Brothers, $565.32; J. Reshauer & Co., $538.93; Morgan Envelope Company, $598.02; W. W. White, $586.51. There are a large number of smaller creditors. The following statement was exhibited to the creditors: Bills receivable, $955.88; bills due firm, $22,382.29; total, $23,338.17; bad debts, $8,334; balance, $15,004.17; merchandise on hand, $31,788.82. Total assets, $46,792.99, less secured by claims due to employees for salary, State taxes, &c., $1,903.47; balance, $44,889.52, less 8 per cent. commission, $3,743.44; total available assets, $41,146.08. Liabilities: Cash, $64.56; bills payable, $42,743.71; balance due firm, $24,608.17; due unexpired term of lease (three years), $6,200. Total liabilities, $73,616.44. A committee was appointed to confer in regard to the value of the stock and fix an approximate appraisement, which was done, with the result shown. Estimated according to this statement the stock of the firm is valued at $31,788.82. The committee found that about $18,000 of this is in staple goods, which it appraised at 66⅔ per cent., or $12,000, and about $14,000 mostly holiday, Easter and Christmas goods, to be valued for the present at only 33⅓ per cent., or $4,333.33. The total valuation, therefore, of the stock, as the committee approximately fix it, is $16,333.33. If sold at auction, 10 per cent. will be deducted for commissions, leaving $14,700 as present available assets, if sold as indicated. There are $15,000 in good debts, which if placed in the hands of a collector at 5 per cent. would decrease the amount $750. Mr. Glass offers to pay 40 cents in three, six, nine and twelve months, without security. One of the Baltimore creditors offered to pay cash for all of the claims at 30 cents. A number of the creditors signed a release, but the representatives of other firms concluded to await advices from their principals.

Personals

James Shand, of James Symington & Co., Lancaster, Pa., with Mrs. Shand, sails for Europe to-day on the Aurania.

C. A. Outterson, who has resigned the superintendency of the Winona Paper Company, Holyoke, Mass., to take effect probably July 1, contemplates taking a pleasure trip to Europe.

John Duffy, of Perkins, Goodwin & Co., and Albert Smith, New York representative of the Glen Manufacturing Company, went to Boston on Monday last to attend the wedding of Nelson Curtis, of the Bridgeport Paper Company.

Nelson Curtis, treasurer of the Bridgeport Paper Company, was married to Genevieve Frances Young, in the Old South Church, Boston, on Monday evening last, and following the ceremony a reception was given at the house of the bride's parents at Roxbury. There was a very large attendance at both the wedding and the reception, and the presents were numerous and elegant. The paper trade was represented by many members, both manufacturers and dealers. Mr. and Mrs. Curtis are now on a wedding trip through the Eastern States.

Obituary.

THOMAS GROOM.

Thomas Groom, who died suddenly at his home in the Dorchester district, Boston, Mass., on Saturday, June 23, was a well-known man among the bankers and business men of Boston for fifty years. He was an Englishman by birth. His native city was Birmingham, where he was born in 1811.

He went to Boston at twenty years of age and entered the stationery trade as a clerk in the employ of Willard Felt, on State street. In 1833 he purchased the business and continued in the same line and upon the same spot until the time of his death, a period of fifty-five years. "He brought with him from London," says a biographer, "all those peculiarities of London trade which had made specialties in any branch successful." His shop in India Building, State street, has for half a century been known as "Stationers' Hall."

Mr. Groom first introduced the popular Gillott's pens into the American market, and for years, also, his establishment has been a headquarters for Russia quills.

Mr. Groom amassed a fortune in his business, and many years ago purchased a fine estate in Dorchester, where he dispensed a courtly hospitality. In 1834 he married Emily Parker, daughter of Nathan Parker. Four years ago the two observed their golden wedding, and their later years have been quietly passed in each other's society. Four months ago a crushing blow came upon Mr. Groom in the loss of the wife of his youth. Thenceforth his life was blighted and he trod the pathway alone and sorrowful.

Mr. Groom's character has been described as "a perfect representation of the English gentleman." His especial characteristics were benevolence, philanthropy and kindness and consideration to those in his employ. It was a pleasure to him, when flowers were in bloom or fruits were ripe upon his place at Dorchester, to drive into the city, past the homes of the poor at the South Cove district, and throw handfuls of flowers or fruits from his carriage to the children in the streets. Such a habit did this become with him that the children by the way learned to look for his coming. But in more substantial ways than this did he show his kindness to those less abundantly blessed than himself with worldly goods. There are many poor families which will doubtless miss their kind benefactor.

Mr. Groom did not forget his old home in England in his prosperity in the New World. He made annual trips thither and had crossed the ocean and returned at least forty times. He was as well known in several English cities as in Boston, and there are many on both sides of the Atlantic who will mourn for him now that he is gone.

Mr. Groom leaves two daughters and one son. One of the daughters is the widow of F. P. Denny, of Brookline, and the other the wife of Rev. C. L. Hutchins, of Medford. The son is a resident of a Western city.

The stationery trade of Boston met on Monday and passed resolutions expressive of their regret.

F. W. GIBBS.

Franklin W. Gibbs, one of Lee's (Mass.) esteemed citizens, died early Sunday morning, aged seventy-eight years. Mr. Gibbs was a native of Blandford, Mass., and went to Lee about forty years ago, manufacturing paper at the Valley Mill, now owned by the Smith Paper Company, but retired with a competency several years ago. He had held several town offices and had been an associate justice of the Lee police court for several years. His wife, who was a daughter of Dr. J. M. Brewster, of Pittsfield, and four children survive him. The funeral was held from his residence on Tuesday afternoon.

S. H. GAY.

Sidney Howard Gay died on Tuesday, after a long illness, at his home at West Brighton, S. I. Mr. Gay was born in 1814 at Hingham, Mass. He entered Harvard at fifteen, but owing to ill health was obliged to leave college in his junior year. In 1842 Mr. Gay became a lecturing agent for the American Anti-Slavery Society, and edited the *Anti-Slavery Standard* from 1844 to 1857. In 1857 he became a member of the editorial staff of the New York *Tribune*, and was the managing editor of that paper from 1862 to 1866. In 1867 he removed to Chicago and was the managing editor of the Chicago *Tribune* until the great fire of 1871. Afterward Mr. Gay was for two years the managing editor of the *Evening Post*, in this city. Mr. Gay was the author of a "Popular History of the United States," and of a "Life of James Madison." He was engaged before his last illness upon a biography of Edmund Quincy for the "American Men of Letters Series." Mr. Gay leaves a widow, two daughters and a son. His burial took place at Hingham.

William M. Rust, publisher of the *Progressive Age*, Belfast, Me., is dead.

William C. Morse, newsdealer, Medford, Mass., is dead.

E. A. Smith, dealer in paper stock, Nashua, N. H., is dead.

John Bahls, of the firm of Althoff & Bahls, bookbinders, San Francisco, Cal., is dead.

George Campbell, one of the oldest paper makers in the State, died at Norfolk, Mass., on Sunday. He had carried on the same mill for forty-two years. Mr. Campbell was born in Dentinburn, England, May 3, 1811.

General Notes.

In the statement made last week relative to the "Nonpareil" clay mine, belonging to the Aiken Mining and Porcelain Manufacturing Company, the "overburden" was given as 69 feet. This, Mr. Ferris, the agent, says is a misconception, as he intended to say 6 to 9 feet.

Chas. A. Schieren & Co. report sales of their leather link belting during the past week to the following named paper mills for use on cone pulleys: Niagara Paper Mills, Lockport, N. Y.; D. M. Bare & Co., Roaring Springs, Pa.; Winnipiseogee Paper Company, Franklin, N. H.; Watertown Paper Company, Watertown, N. Y.

Jarvis B. Edson, 145 Broadway, reports that, notwithstanding the general complaint of dullness in business affairs, his orders for pressure recording gauges have lately exceeded his manufacturing capacity, and he has added to his plant and working force. The National Transit Company has just ordered fifteen additional instruments, making over fifty now in use on its lines, working up to a pressure of 1,500 pounds to the square inch. Orders from paper mills and electric light installations continue with gratifying frequency.

SPECIAL NOTICES.

[Insertions under this heading will be charged 50 cents a line. Payment invariably in advance.]

P. HART & CO.,
WHOLESALE DEALERS AND PACKERS OF
Rags, Paper Stock, Metals and Rubber,
134 AND 136 JANE STREET NEW YORK.

THOS. BUTLER & CO.,
Rags, Paper Stock, Old Metals, Rubber,
249-253 CAUSEWAY ST., BOSTON, MASS.

CARPENTER & BARTLETT,
Cotton and Woolen Rags, Paper Stock, Old Metals and Rubber,
No. 100 FROST STREET, HARTFORD, CONN.

PATRICK GARVIN,
Manufacturer and Dealer in Paper and Paper Stock. All grades of Mill Stock specially assorted. All grades of paper made to order.
207 STATE STREET, HARTFORD, CONN.

JAMES SAVAGE, JR.,
Rags, Paper Stock, Rubber, &c., &c.,
530 TO 536 WEST 28TH ST., NEW YORK.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL,
FRIDAY, June 29, 1888.

THE MONEY MARKET.—The stock market is very dull, but closed with an upward movement, led by the Gould stocks, in progress. Call loans were 1@1½ per cent. on stock collateral. Mercantile paper was quoted as follows:

	Sixty days.	Four months.
Double-named—		
First-class	4 @ 4½	4 @ 4½
Good	4½@ 5	4½@ 5
Single-named—		
First-class	5 @ 5¾	5 @ 5½
Good	6 @ 7	6 @ 7
Not so well known	7 @ 8	7 @ 8

The market for sterling was rather heavy, owing to restricted inquiry. Posted rates were $4.87½ for sixty days' and $4.89½ for demand. Rates for actual business were as follows: Sixty days' sight, $4.87; demand, $4.88½@4.88¾; cables, $4 88¾@4.89; commercial, $4.85¼@4.86. Continental bills were dull and quoted as follows: Francs, 5.18¾ and 5.16¾; reichsmarks, 95⅜ and 96; guilders, 40⅜ and 40⅝. Government bonds were firm, sales being $10,000, coupon, 4's, at 128½. Railroad bonds were steady to strong.

THE PAPER TRADE.—Dullness is at present the chief feature of the paper market, and this state of affairs is not confined solely to local circles or warehouse trade, for orders on first hands have slackened up to some extent, except perhaps in the line of News grades, makers of which are busy, and production is well under the control of orders. There are some News contracts still in the market, no award of them having yet been made. Some makers of Book papers report a falling off in demand, while some few say that requests have come to hand in larger quantities since the Presidential nominations were made. Writings are in fair movement and prices are steady. The Manilla men have not yet agreed to shut down, the required 80 per cent. not having signed the agreement. Strawboards are quiet and unchanged, as are also Straw Wrappings. Warehouse trade is very quiet, and as to this statement the trade is a unit.

JUTE BUTTS.—The Jute Butt market is inactive, most manufacturers having supplies for the moment. Sales for the past week have aggregated 1,000 bales at 1.90c. The ships Windsor Park and Falls of Alton arrived with 15,489 bales, 6,000 of which go into stock, the rest going direct to manufacturers. New crop Butts in Calcutta are held firm at 1 15-16c.

WOOD PULP.—There is a fair demand for Ground Wood and prices remain as before at 1¾@1⅞c. for Domestic Spruce delivered and 1.55c. for 50 per cent. Wet ex dock. Dry rules at 1.65c. During the week 349 tons came to hand, all from Christiania.

WOOD FIBRE.—The Chemical Fibre market is favored with a steady demand, and values rule steady. Association price on Bleached is still 3¼c. Foreign grades are quoted as follows: Unbleached Pine, soda process, 3@3.30c.; Bleached, same process, 3⅞@4.15c.; Unbleached, sulphite process, 3⅛@3.85c., and Bleached do., 4½@6¼c.; Bleached Straw Pulp, 4¼@5¼c. Arrivals for the week aggregated 952 tons, being 353 tons from Christiania, 169 tons from Hull, 115 tons from London and 315 tons from Stettin.

FOREIGN RAGS AND PAPER STOCK.—Dullness still characterizes the market for foreign rags and the business in progress is very light, importers very generally complaining of slow demand. Primary markets are still firm and freights maintain their high standard, and these two causes act as a very material check to important transactions. Arrivals aggregated 10,403 bales and 1,301 tons, being 3,311 bs. rags, 786 bs. old papers, 952 tons chemical fibre, 349 tons ground wood and 6,306 bs. manillas. Ports of shipment and quantities were: Bordeaux, 74 bs. rags; Calcutta, 1,500 bs. manillas; Christiania, 353 tons chemical fibre, 349 tons ground wood; Dundee, 315 bs. old papers, 988 bs. manillas; Genoa, 848 bs. manillas; Hull, 927 bs. rags, 149 bs. old papers, 169 tons chemical fibre, 196 bs. manillas; Liverpool, 190 bs. old papers, 1,039 bs. manillas; London, 892 bs. rags, 132 bs. old papers, 115 tons of chemical fire, 1,604 bs manillas; Marseilles, 146 bs. rags, 131 bs. manillas; Pillau, 1,272 bs. rags; Stettin, 315 tons chemical fibre.

DOMESTIC RAGS.—Business is quiet, as is usually the case at this period of the year. Prices, however, hold well. We note sale of 150 bales No. 1 City Whites at 3¼c.

BAGGING, &c.—Arrivals have been somewhat freer, and the desire on the part of some importers to avoid storing goods has enabled some manufacturers to pick up lots on the dock at low prices, and we hear of sales said to be at 1.80c. The price has become unsettled because of this condition of things, but for shipment rates appear to hold well, with 1.85c. quoted, and offers of 1.82c. and 1.84c. declined. Domestic Bagging is moving quite freely, and we note sales of 25 tons at 1.70c. Hemp Twines on spot are offered at 2⅞c. Manilla Rope is slow, but 2⅝c. is still asked for strictly No. 1 Domestic. There arrived during the week 6,306 bs. of manilla stock, ports of shipment and quantities being: Calcutta, 1,500 bs.; Dundee, 988 bs.; Genoa, 848 bs.; Hull, 196 bs.; Liverpool, 1,039 bs.; London, 1,604 bs.; Marseilles, 131 bs.

OLD PAPERS.—There is a moderate trade, but there is no special activity. We hear of 25 tons Domestic Books sold at 1¾c., with a further 30 tons of special packing at a higher figure. We quote: No. 1 Hard White Shavings, 3½c.; No. 1 Soft White do., 2¾c.; Old Ledgers, 2¼c.; Solid Printed Books, 1.60@1.65c.; Mixed Shavings, 1½@1¾c.; No. 1 Manillas, 1.60c.; Light Book Stock, ¾c.; Folded News, 1⅝@1¾c.; Commons, 60@65c.; Bogus Manillas 60@90c.; Strawboard Clippings, 60@65c.; Binders' do., 65c.

STRAW.—The market is about steady on moderate demands. We quote: No. 1 Rye at $1@1.05; Short Rye at 65@70c.; Oat at 40@50c.

ROSINS.—There is a moderate business at lower prices. We quote in lots from the yard: Common to Good Stained, $1.35@1.40; E, $1.45@1.47½; F, $1.52½@1.55; G, 1.60@$1.62½; H, $1.65@1.67½; I, $1.75@1.77½; K, $1.90; M, $2.10; N, $2.15@2.20, and W G, $2.70.

CHEMICALS.—There is no improvement in the demand for paper makers' chemicals Bleaching powders are quiet and figures range from 1.85@1.95c., as to brand and quantity. Carbonated Soda Ash, Liverpool make, is quiet, and the only business is that necessary to care for present wants. Newcastle Soda Ash, 48 per cent., is scarce, and there is almost nothing offering in the way of shipments. Caustic Soda Ash, 48 per cent., has very little attention for prompt delivery, but there is some inquiry for future supplies. There is not much doing in high test Caustic Soda, and prices are somewhat nominal. Sal Soda is easier on spot, owing to arrivals, but the supply is small and holders are not anxious to sell. Alum is moving in a moderate way at the old prices. During the week there have been sales of 200 cks. Bleach at 1.95c.; 300 tons Soda Ash at 1.30c.; 400 tons, 58 per cent., Alkali at 1.20c.; 200 drums, 70 per cent., Caustic Soda at 2.30c.; 100 tons Sal Soda at 1c.; 500 bbls. Natrona Porous Alum at 2½c.; 500 bbls. Pearl Alum at 2½c.; 300 bbls. Keystone Alum at 1⅜c.; 150 bbls. Ground Alum at 1.85c.; 100 bbls. Lump Alum at 1.75c.; 30 cs. German Ultramarine at 17c.; 25 bbls. Yellow Prussiate of Potash at 18½c.

CHINA CLAY.—There is an apparent shortage on low grades, with a fair demand existing. A steamer lot of the better grades is reported as on the way, consisting of, say, 200 tons, which is expected in about a week. No arrivals of the lower grades are expected until about the middle of July. The following are the ruling quotations: High grades, $18; medium, $16, and low grades, $14.

COAL.—Saward's *Coal Trade Journal* says: "Anthracite coal is in good demand, and when one reviews the trade as a whole it must be said that it has been far better than is usually the case in the month of June. We have rounded up the first six months of this year in good shape; there has been as much coal disposed of as in former years, in spite of the croakers who have said this was to be a bad year for the coal business; the net result will prove that it is one of the best in a series of years. There are changes taking place and more are likely to occur in the distribution of hard coal, and those who miss the benefit thereof are likely to be croakers, but the business moves on with a steady growth and the value of hard coal as a domestic fuel is appreciated more and more each year. Locally the trade is reported quiet, and there is the feeling abroad that this nearby market can get its supplies at any and all times; there has been some business done, but the dealers are apathetic at present; the tonnage sold for July delivery is large and it is mainly on the basis of 'take it in that month or the order will be cancelled.' Philadelphia reports speak of 'an improved outlook, although the Reading has a much larger stock of coal at Port Richmond now than has been stored there for several years past, which is said to be due to the fact that vessels have been scarce until last week, and because the company has determined to sell coal only at a profit. As regards an advance in prices, there are some who say it will not take place, but it is noticed that no one is running after business; the buyers are doing the seeking.' Chicago report is of excellent market conditions, though buyers do not take hold with any celerity as yet; there is bound to be a larger tonnage used, and the earlier it is actually taken in by the dealer the more satisfied must be his reflections later on in the year; there is now every reason to expect more than stability to the present prices. The result of the Western committee meeting, to be held on the 28th, is awaited with considerable interest. The dealers in New England have not received nor have they given orders for any great portion of their requirements; we presume that not over one-quarter or one-third of what they will need has even been contracted for. This slowness to grasp the situation is peculiar, and it would seem that the results of last season's delaying go for naught with the trade in the North Atlantic Coast ports. There are likely to be some lively times this fall when the rush sets in; already one hears that cars and vessels are scarce for the prompt delivery of what orders may be in hand, and there is no difficulty in the way of correctly answering the problem of the future, in this respect at least."

EDWIN BUTTERWORTH & CO.,
MANCHESTER, ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing, Wood Pulp, Moist and Air Dry Pulp, Soda and Ground Pulp,
(P) 83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Traci House, 150 Nassau Street, near Tribune Office.
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Lawyers.—Chicago.
COMMERCIAL AND CORPORATION LAW.
Special arrangements can be made by Manufacturers and Jobbers to be notified of failures, and to have their interests at Chicago protected.
REFERENCES—J. W. Butler Paper Co., W. H. Parsons & Co., S. A. Maxwell & Co.

CRATTY BROS. & ASHCRAFT, Lawyers,
189 Dearborn Street, CHICAGO.
COMMERCIAL AND CORPORATION LAW.
COLLECTIONS A SPECIALTY.
REFERENCES.—Western Wrapping Paper Mfg. Ass'n, CHICAGO: Chicago National Bank; Western News Co.; Rand, McNally & Co. NEW YORK: George Mather's Sons. BOSTON: Carter, Rice & Co.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS SELLING PRICES.

Ledger and Record	$0.18 @	$0.24
Flat Caps, superfines	14 @	18
Flat Caps, fines	13 @	15
Flat Caps, engine-sized	9 @	11
Blotting, American	8½@	17
Blotting, English	19 @	—
Book, super-sized and calendered	7 @	8½
Book, super-sized and tinted	9 @	8
Book, extra machine finish	7 @	7½
Book, machine finish, low grade	6½@	7
Book, No. 1, shavings & imperfections	6½@	7
News No. 1	5 @	5⅝
News, rag and wood	4½@	5⅛
News, straw	4¼@	5⅛
Poster	8 @	10
Hanging, superfine, No. 1	7 @	9
Hanging, superfine, No. 2	7 @	7½
Hanging, machine satin	6 @	6¾
Hanging, white blank, No. 1	5½@	6
Hanging, curtain	5 @	5½
Hanging, buff	4 @	—
Hanging, brown	3½@	3½
Colored papers, double mediums	7½@	8¼
Colored papers, glazed medium	8½@	10
Colored papers, tobacco	8½@	9½
Colored papers, tissues, 20 x 30, ℔ ream	1.20 @	1.35
Tissues, black, 20 x 30, ℔ ream	1.40 @	1.50
White tissue, 20 x 30, ℔ ream	85 @	1.00
White tissue, 24 x 36, ℔ ream	1.30 @	1.50
Manillas, Flour-sack, cream	10½@	12
Manillas, Flour-sack, drab	9½@	11
Manillas, Rope, unbleached No. 1	9½@	11
Manillas, Rope, unbleached No. 2	7½@	9½
Manillas, No. 1, light weight	7 @	8
Manillas, No. 1, heavy weight	6½@	7
Manillas, No. 2	5 @	6
Manillas, Bogus	2½@	3
Wrapping Parchment	16 @	20
Tissue Manillas, full count, weight and size, 24 x 36, other sizes in proportion	75 @	80
Hardware, light colored, No. 1	9 @	10
Hardware, No. 1, glazed, tarred	7 @	8
Hardware, No. 2, glazed	5 @	6
Binders' Boards, ℔ ton, No. 1	70.00 @	90.00
Binders' Boards, ℔ ton, No. 2	40.00 @	50.00
Straw Boards, air-dried, No. 1, ℔ ton	45.00 @	—
Straw Boards, steam-dried, No. 1, ℔ ton	42.50 @	—
Straw Boards, steam-dried, No. 2, ℔ ton	40.00 @	—
Straw Boards, steam-dried, No. 3, State, ℔ ton	37.50 @	—
Straw Boards, air-dried, Penn, ℔ ton	35.00 @	—
Straw Boards, air-dried, State, ℔ ton	37.50 @	40.00
Straw Wrapping, basis, 15 x 20, 15⅛ lbs. 20 sheets—		
36 x 40, from 38 to 42 lbs. ℔ rm	— @	1.75
30 x 40, from 30 to 34 lbs. ℔ rm	— @	92
24 x 36, from 24 to 26 lbs. ℔ rm	78 @	—
22 x 32, from 24 to 26 lbs. ℔ rm	— @	72
20 x 30, 21 lbs., ℔ rm	54 @	56
20 x 30, from 14 to 17 lbs. ℔ rm	46 @	—
16 x 22, from 12 to 13 lbs. ℔ rm	— @	36
18 x 28	— @	40
15 x 20, 10 lbs. ℔ rm	27 @	28
15 x 20, from 7 to 8½ lbs. ℔ rm	— @	23
14 x 18	— @	20
12 x 16	— @	18
11 x 15	— @	16
Straw Wrapping, ℔ lb., heavy weight	1¼ @	2
Straw Wrapping, ℔ lb., light weight	8½@	9½
Cigarette Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	30.00 @	35.00
Tea Papers, 16-sheet quires—		
12 x 18	21 @	23
14 x 20	28 @	30
Card Middles, ground wood	5½@	6¼
Card Middles, long fibre wood	8½@	9¼
Card Middles, rag and wood	6 @	7
Wood Fibre, bleached	3½@	—
Wood Fibre, unbleached	3½@	—

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1.20	@	—
Alum, lump	1.75	@	—
Alum, ground	1.80	@	—
Alum, Keystone	1¾	@	—
Alum, Diamond	—	@	2¼
Alum, pearl	2¾	@	—
Alum, porous	2¾	@	2½
Aluminous Cake	—	@	1½
Anti-Chlorine	—	@	2½
Bichromate Potash, American	—	@	10½
Bleaching Powders, spot and to arrive	—	@	1.92½
Caustic Soda, 70 ℔ cent	2.30	@	—
Clay, China, English, ℔ ton	12.50	@	16.50
Clay, China, "Star"	12.50	@	—
Clay, South Carolina, ℔ ton	12.00	@	13.00
Clay, Terra Alba, French, ℔ 100	70	@	95
Clay, Terra Alba, American, No. 1	75	@	80
Corn Starch	—	@	2¼
Copperas, American	—	@	75
Extract Logwood	8	@	—
Mineral Fibrous Pulp	25.00	@	—
Orange Mineral	—	@	8½
Potato Starch	—	@	3¾
Prussian Blue, dry	28	@	45
Prussiate Potash, American	—	@	18½
Rosins, common to good strained, ℔ bbl.	1.35	@	1.40
Rosins, E, ℔ bbl.	1.45	@	1.47½
Rosins, F, ℔ bbl.	1.52½	@	1.55
Rosins, G, ℔ bbl.	1.60	@	1.62½
Rosins, H, ℔ bbl.	1.65	@	1.67½
Rosins, I, ℔ bbl.	1.75	@	1.77½
Rosins, K, ℔ bbl.	1.90	@	—
Rosins, M, ℔ bbl.	—	@	2.10
Rosins, N, ℔ bbl.	2.15	@	2.20
Rosins, W G, ℔ bbl.	2.70	@	—
Sal Soda, English	—	@	—
Soda Ash, caustic, 48 ℔ cent	—	@	1.30
Soluble Blue	50	@	55
Spanish Brown	¾	@	1
Sugar Lead, white	13	@	13½
Sugar Lead, brown	7½	@	8
Sulphate of Alumina	—	@	2½
Sulphuric Acid, 66 ℔ cent	1½	@	1¾
Ultramarine, blue	12½	@	17
Venetian Red	—	@	1.35
Vitriol, blue	4½	@	5
Yellow Ochre, Rochelle	—	@	1.25

BOSTON MARKET.

Paper Stock.

Mill Assorted Whites	4¼	@	
Cotton Canvas	4½	@	4¾
Cotton Canvas, No. 2	2½	@	—
Gunny Bagging	1½	@	2
Gunny Bagging, No. 2	—	@	—
Shivey Bagging	1¼	@	—
Waste Woolens	½	@	1
Jute Butts	1 15-16	@	2
White Collar Cuttings	2¾	@	3
White Envelope Cuttings	3¼	@	3½
Hard White Shavings, No. 1	3	@	3¼
Soft White Shavings, No. 1	2½	@	2¾
White Shirt Cuttings	5½	@	—
Country White Rags	4¾	@	4¾
Country Mixed Rags	2½	@	2
City Whites, No. 2	3½	@	3½
Seconds, Country	3	@	3¼
White Shavings, No. 2	1¾	@	2
Mixed Shavings (¾ white)	1¾	@	1¾
Imperfections	1	@	1½
Book Stocks	1¾	@	2⅛
Light Prints	1	@	1½
Manilla Papers, old	2¼	@	2¼
Hardware and Manillas	$10.00	@	—
Straw Board Cuttings	$12.00	@	15.00
Linen Canvas	3¼	@	3½
Colors	1	@	1½
Manilla Rope	2¼	@	2¾
Binders' or Tar Board Cuttings	1¼	@	1½
Common Papers	½	@	¾
Oakum Junk	2½	@	3
Hemp Rope, Tarred	2½	@	—
Rigging	4¾	@	4⅞

New Papers.

Superfine Book	7	@	8
Fine Book	6	@	7
News, rag and wood	5¾	@	6
News, No. 1, all rag	6	@	6¼
Manilla, Cream Rope	9½	@	10
Manilla, No. 1, Rope	8¾	@	9
Manilla, Extra Jute	5	@	6¼
Manilla, Jute and Gunny	5¾	@	6
Manilla, No. 2	5	@	5¾
Manilla, Bogus	4	@	5
Hardware, No. 1, tarred	7½	@	8¼
Hardware, No. 2	7	@	8
Hardware, red	5	@	6
Straw Boards, air-dried, ℔ ton	$50.00	@	$60.00
Straw Boards, steam-dried, ℔ ton	$30.00	@	$40.00
Straw Wrapping, heavy	1.90	@	2¼
Straw Wrapping, light	2¼	@	2¾
Binders' Boards, ℔ ton	$53.00	@	$60.00
Leather Board, Common, ℔ lb	3	@	4
Leather Board, counter	5	@	8
Leather Board, extra	8	@	10
Tar Boards, ℔ ton	$100.00	@	$110.00

English Rags, &c.

Fines	3½	@	3¾
Outshots, cotton	3	@	3¼
Seconds	2½	@	2¾
Seconds, extra	2	@	2½
Thirds	1½	@	1⅞
New Print Tabs	2¼	@	2¾
Checks and Blues	2	@	2½
Light Prints	1½	@	1⅞
Light Fustians	1½	@	1⅞
Dark Fustians	1½	@	1⅞
Black Calicoes	1½	@	1¾
Gunny Bagging, No. 1	1½	@	2
Gunny Bagging, No. 2	1½	@	1¾
Mixed Bagging	1½	@	1¾
Rope Manilla	2½	@	2¾
Rope Manilla, tarred	2¼	@	—
Jute Ropes	2¼	@	2¾
Jute Threads	2¼	@	2⅞

English Old Papers and Shavings.

Soft Shavings, No. 1	2¼	@	2½
White and Colored Shavings, No. 1	1¾	@	1¾
White and Colored Shavings, No. 2	1¼	@	1¾
Cream Post Shavings	2½	@	2⅞
Paper Collar Cuttings	2½	@	2¾
Ledgers	2¾	@	2¾
Books and Pamphlets, extra	1¾	@	1⅞
Old Newspapers and Pamphlets	1¼	@	1⅜
Broken News and Letters	1	@	1½
New Books, solid folios	—	@	2
Old Blank-Books	—	@	2½
Old Printed Books	2¼	@	2¾
Buff Railway Sheets	2¼	@	2½
Railway Tickets	1¾	@	1¾

Leghorn Rags.

P P, No. 1 Linens	—	@	—
S S, No. 2 Linens	—	@	—
T T, No. 3 Linens	—	@	—
P, No. 1 Cottons	—	@	—
S, No. 2 Cottons	—	@	—
T, No. 3 Cottons	—	@	—

Alexandria Rags.

Whites	1¾	@	1⅝
Blues	1¾	@	1⅝
Colors	1¾	@	1¾

Smyrna Rags.

Whites	1¾	@	1⅝
Blues	1¾	@	1⅝
Reds	1¾	@	1¾

Constantinople Rags.

Whites, No. 1	—	@	—
Whites, No. 2	—	@	—
Whites, No. 3	—	@	—
Blues	—	@	—
Reds	—	@	—

Chemicals.

Alkali, 58 ℔ cent	1.15	@	1.20
Alkali, 76 ℔ cent	1.30	@	1.90
Aluminous Cake, currency	1¼	@	1½
Alum, American ground	2	@	2½
Alum, American lump	1¾	@	2
Anti-Chlorine	3	@	3¼
Bi-Chromate Potash, American	10¾	@	—
Bleaching Powders	1.85	@	1.87½
Blackley Blue	2.00	@	3.00
Caustic Soda, 70 ℔ cent. (for 60 ℔ cent.)	—	@	2.25
Clay, English, ℔ ton	14.00	@	18.00
Clay, American, ℔ ton	13.00	@	14.00
Copperas, ℔ lb	¾	@	1
Extract Logwood	5¾	@	6½
Lime, Rockland, ℔ bbl.	95	@	1.00
Prussian Blue, ℔ lb	50	@	60
Prussiate Potash, American, yellow	—	@	18½
Prussiate Potash, red	52	@	52
Rosin, common strained, ℔ bbl.	1.45	@	1.50
Rosin, No. 2	1.50	@	1.60
Rosin, No. 1	1.65	@	1.80
Rosin, pale	2.50	@	3.00
Rosin, extra pale	3.50	@	3.70
Sal Soda, English, ℔ lb	0¾	@	1
Soda Ash, 48 ℔ cent. cent. caustic	1¾	@	1.30
Soda Ash, 48 ℔ cent. carbonated	1¼	@	1.40
Soluble Blue	55	@	65
Sugar Lead, white	10¾	@	13¾
Sugar Lead, brown	7¾	@	8
Sulphuric Acid, 66°	1½	@	1¾
Terra Alba, ℔ ton	15.00	@	20.00
Ultramarine, ℔ lb	12½	@	16
Venetian Red, ℔ lb	1½	@	1¾
Vitriol, Blue	5½	@	5¾
Yellow Ochre	1½	@	2

Advertisements.

Twenty-five cents per line of eight words each insertion. No charge less than one dollar.

CLARK, CHARLES S., Newspaper in Rolls for Perfecting Presses. Book, Plate and Chromo Papers. Potter Building, 38 Park Row, New York.

WANTED—POSITION BY ENGINEER; understands beating all kinds of stuff; thirty years' experience. Address ENGINEER, care of Paper Trade Journal.

WANTED—A STACK OF FIVE CHILLED Calender Rolls in first-class order, 68 or 70 inch face, with Stands, Housings, &c., complete. State the diameter of each roll, kind of clutch and other particulars, with lowest price delivered on cars. Address CALENDERS, care of Paper Trade Journal.

WANTED—AN ENGINEER WHO THOROughly understands beating manilla rope and tissue papers. A sober and competent man will be paid good wages and have steady employment. Address, giving reference and full information, H. B. & Co., care of Paper Trade Journal.

A PRACTICAL ENGINE DRIVER WANTS A situation; well up in all kinds of engines; capable of doing all repairs and keeps his own indicator. ENGINE DRIVER, care Paper Trade Journal.

WANTED—THREE CAST IRON DRYERS, 36×64 inch face, and Set Chilled Rolls for 66 inch machine.
J. & W. REID, Quebec.

WANTED—MACHINE TENDER TO RUN carpet linings and sheathing papers; permanent position to the right man. Address, with references, QUICK, care Paper Trade Journal.

SITUATION WANTED—A PUSHING YOUNG man, superintendent of a two-machine fine writing mill, with large experience in making colors and all grades of fine papers, wishes engagement with a fine writing or first-class book mill.
Address
LOCK BOX 308,
Holyoke, Mass.

FOR SALE—ONE 64 INCH PAPER MACHINE in pieces to suit the purchaser. Apply to A. B. THOMPSON, Esq., assignee of J. C. SHAW, Mercer, Pa. June 11, 1888.

FOR SALE—FOUR 28-INCH 5-ROLL SHEET Calenders; one 24-inch 5-Roll Sheet Calender. For particulars inquire
PARSONS PAPER COMPANY, Holyoke, Mass.

GRAND OPPORTUNITY! GREAT CHANCE!
OPEN ONLY TO
PRACTICAL MEN.
A large building, L shaped, 150×50, two stories, with a large amount of water power and water suitable for manufacturing news paper. Excellent shipping facilities and within five cents per hundred of the New York market. Orders given for a daily product of four tons. Answer, stating references, capabilities, and capital at command, to N., care Paper Trade Journal.

BARGAINS.

18×48 Horizontal Corliss Engine.
16×32 Horizontal Wright Engine.
14×42 Horizontal Wheelock Engine.
Two Horizontal Tubular Boilers, 80 horse power, fine order. A large lot of Steam and Power Pumps at very low prices.
D. B. CRUICKSHANK,
243 Dyer Street, Providence, R. I.

WANTED.

A partner to take entire charge, with $4,000 half interest, to make Strawboards, Sheathing or Bogus Papers; machine 62 inch. Address "TWO CYLINDER," care Paper Trade Journal.

FOR SALE.

Two Cast Iron Dryers, 28×68 inches.
One Gun Metal Couch Roll, 14×96 inches.
One Gun Metal Couch Roll, 16×96 inches.
One New 62 inch Stop Cutter.
One Chilled Calender, 15×76 inch.
Five Chilled Calenders, 7×76 inch.
For particulars address
THE BLACK & CLAWSON CO., Hamilton, Ohio.

PATENTS.

A Primer of Patent Law for Inventors and Manufacturers; with Tables of Terms of and Fees for Patents in all patent granting countries. By WILLIAM H. FINCKEL, Solicitor of Patents (*Practicing since 1869*), No. 627 F Street, Northwest, Washington, D. C. Copy sent free on request.

FOR SALE CHEAP.

New 54 inch Wet Machine complete; never run. Four 500 lb. Beating Engines complete. Cylinder Washers, Copper Lined Tubs, and good for twelve years. Two stacks Chilled Calenders, 62 inch face, nearly new, made by J. Morton Poole. One Rice & Barton Rag Cutter. Two 30 inch and two 48 inch Hercules Water Wheels; also Tyler Wheels. Six first-class, five pocket Improved Voelter Grinders.
F. H. DAVIS & CO., Holyoke, Mass.

FOR SALE.

Machinery of a Complete Paper Mill

—CONSISTING OF—

Two 80 horse power Boilers, One 120 horse power Engine, One 15 horse power small Engine, Belting, Shafting, Beaters, Cylinders, Rollers, &c., &c.

Must be Sold, as it has to be Removed.

COST ORIGINALLY $20,000, AND CAN BE BOUGHT FOR $4,000.

The building in which this Paper Mill is situated can be bought also. It fronts on Cary Street 44 feet, and extends back 100 feet to Dock or Canal Street. Accessible both by rail and water. Piedmont Air Line Railroad running within three feet of the back door and the dock across the street. Water for the mill free of charge, and in every respect one of the finest business locations in the South.

For particulars, address
JAMES C. SMITH, Richmond, Va.

PULP GRINDERS.

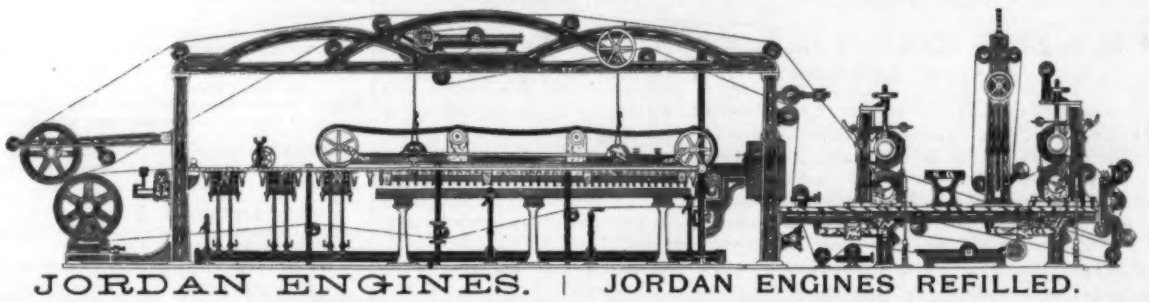
FOUR
VOELTER MACHINES
In Good Order.
FOR SALE VERY LOW.
STILWELL & BIERCE MFG. CO.,
DAYTON, OHIO.

THE BLACK & CLAWSON CO.,

—MANUFACTURERS OF—

PAPER MILL MACHINERY,

Fourdrinier, Harper Improved Fourdrinier and Cylinder Machines.



JORDAN ENGINES. | JORDAN ENGINES REFILLED.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.
REVOLVING REELS AND STACK REELS.
FOR PARTICULARS, ADDRESS

THE BLACK & CLAWSON CO., Hamilton, Ohio.

STACK CALENDER WANTED.

Wanted, a stack calender with chilled rolls. Please send description and lowest price to
D. C. S., care Paper Trade Journal.

PAPER MILL FOR SALE.

Situated in Bridgewater, Mass., on Taunton River, twenty-seven miles from Boston per Old Colony Railroad. Water and steam power; Corliss engine; 62 inch double cylinder machine, now in full operation; rotary bleach and Jordan engine; will be sold at a bargain on easy terms. Address
P. O. BOX 3316, Boston, Mass.

PAPER MILL FOR SALE OR LEASE.

Large stone mill; 46-inch double cylinder press; 185 H. P. engine; water power from canal cheap. A number of dwelling houses; hotel, store, &c., on canal, and one-half mile from railroad station; on the Delaware, five miles below Easton, Pa.
Descriptive circular and photographs sent on application. Very little expense or delay in putting everything in first-class order. Address the owner, M. J. WINE, Washington, D. C.

TO THE MANUFACTURERS OF

Chemical Fibre.

The undersigned is prepared to furnish plans and estimates for machinery in connection with a new process for reclaiming soda and other by-products in the manufacture of chemical wood fibre, and their conversion into useful products, by which a saving of over 50 per cent. can be guaranteed.

PETER HOGAN,
Consulting Engineer,
551 BROADWAY, ALBANY, N. Y.

FOR SALE.

Fourdrinier Paper Machine.

Wire, 72 inches by 32 feet; 12-inch Couch Rolls; 12-inch Press Rolls, bottom roll rubber covered; six 28-inch Dryers, four copper and two iron; two Stacks of Calenders, one of three 12-inch rolls, the other nine rolls chilled, top, 12-inch, bottom, 14-inch, and intermediate, 7-inch; Upright Reel; Steady-motion Cutter; Driving Gears all complete. Taken out to make room for a 90-inch machine. Address
LOUIS SNIDER'S SONS, Hamilton, Ohio.

80 H.-P. STEAM BOILER.

68-in. FOURDRINIER PAPER MACHINE

And other desirable Machinery cheap.

PLATNER & PORTER MFG. CO. Unionville, Conn.

CYRUS CURRIER & SONS,

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Paper Machinery.

KINGSLAND

BEATING-ENGINE.

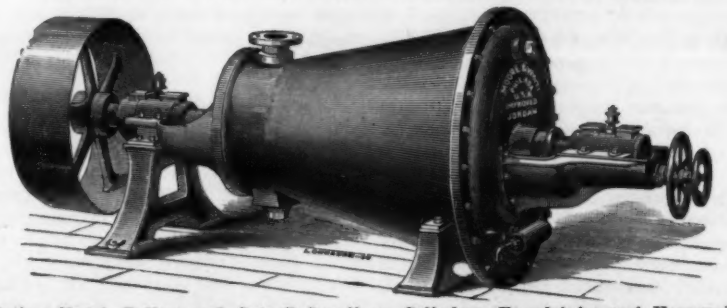
OHIO FELTS.

Fourdrinier and Cylinder Wet Felts,
PRESS FELTS and JACKETS,
MANUFACTURED BY
SHULER & BENNINGHOFEN,
HAMILTON, OHIO.

In ordering Felts, please mention kind of stock used, quality of paper made, and speed of machine.
Particular attention called to our Superfine Felts for Writing-Papers.
SATISFACTION GUARANTEED.

THE MOORE & WHITE CO., 1312, 1314, 1316 Buttonwood St. PHILADELPHIA, PA.,

Builders of Paper Mill Machinery of Every Description.



Friction Clutch Pulleys and Cut-off Couplings, Cylinders, Fourdrinier and Harper Improved Paper Machines; White's Patent Stop Cutters; Cone Pulley Cutters.
ALL MACHINERY of the HEAVIEST and LATEST IMPROVED PATTERNS.

CHENEY-BIGELOW WIRE WORKS, SPRINGFIELD, MASS.,

—MANUFACTURERS OF THE—

NEW PATENT TRUSS DANDY.

LIGHTEST AND MOST RIGID DANDY EVER PUT ON THE MARKET.
PATENT SEAM WOVE DANDY COVERS.
ARTISTIC WATERMARK WORK A SPECIALTY.
Fourdrinier and Cylinder Wires, Cylinder Molds, Felt and Wire Guides, Suction Box Plates, Slitters, Lock Valves.

WOOD PULP,

Chemical and Mechanical,
—IMPORTED BY—
A. WERTHEIM & CO.
Bennett Building, Nassau and Fulton Streets, New York.

AMERICAN LEATHER LINK BELT CO.

"American Patent Joint" Leather Link Belting!

SPECIALLY ADAPTED FOR RUNNING ON THE CONE PULLEY OF PAPER WINDERS.
Guaranteed for "Quarter Turn."

CHAS. A. SCHIEREN & CO.,
Manufacturers and Sole Agents,
NEW YORK, CHICAGO,
BOSTON, PHILADELPHIA.

STRONGEST!
CHEAPEST!
BEST!

INDESTRUCTENE BELTING.

TRADE MARK. TRADE MARK.
SOLE MANUFACTURERS,
COMBINATION ROLL AND RUBBER CO., Bloomfield, N. J.

PHILIP GREELY, 19 Milk St., Boston, ROOM 44,

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Wholesale and Commission Dealer
—IN—
BOOK, NEWS & MANILLA PAPERS,
Colored Posters, Mediums, Paper Mill Wrappers and Twines.

DeGRAUW, AYMAR & CO.

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Manilla and Sisal Rope

—FOR—

THE PAPER TRADE,

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FULTON, NEW YORK,

—MANUFACTURER OF—

Voelter's Wood Pulp Grinders,

WITH SCREW OR HYDRAULIC FEED, AND

PAPER MILL MACHINERY.

Cone-Pulley Cutters, Paper Trimmers, Rag Cutters Straw Washers, Stuff Pumps.

SPECIALTY MADE OF PAPER MILL ENGINES.

Also Engine Bars and Bed Plates; Improved Grinding Machine for Grinding; Press and Chilled Calender Rolls.

GENERAL JOBBING AND REPAIRING.

BARRY'S PATENT Automatic Steam Regulator

Can be used with live or exhaust steam, or both. For description and references address

THOS. P. BARRY & CO., Stillwater, N. Y.
GAGE MACHINE WORKS, Waterford, N. Y.

G. K. SHOMBERGER, - - - Proprietor.

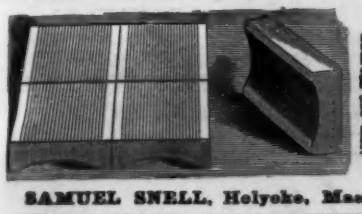
CHICAGO Steam Boiler, Engine Works and Iron Foundry,

Marine and Stationary Boilers. Rotary Bleachers and Castings.

Water, Lard and Oil Tanks and Sheet-Iron Work, 60, 62, 66, 68, 70 & 72 Michigan St., CHICAGO.

FILTERING STONES.

In Use in the Leading Paper Mill.



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SAMUEL SNELL, Holyoke, Mass.

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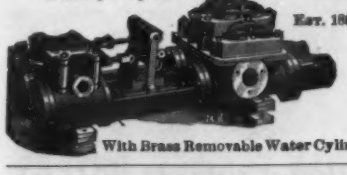
Pumping Machinery or Every Purpose

McGOWAN PUMP CO.

Est. 1862.



With Brass Removable Water Cylinders.

THE MORRISON & HERRON TESTING SYSTEM.

THE MORRISON & HERRON IMPROVED Paper Testing MACHINES.

Three Different Machines

—FOR—

STRENGTH, THICKNESS AND WEIGHT.

A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

Price, complete,	$150.00
Or Strength Indicator,	75.00
Thickness Gauge,	75.00
Paper Scale,	10.00

ADDRESS ALL ORDERS TO

E. MORRISON,

805 D Street, Washington, D. C.

THE VICTOR TURBINE.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

Possesses more than Double the Capacity of other Water Wheels of same diameter, and has produced the Best Results on Record, as shown in the following tests at Holyoke Testing Flume:

Size Wheel,	Head in Feet.	Horse-Power.	Per Cent. of Useful Effect.
15-inch.	18.06	30.17	.9039
17½ inch.	17.96	36.35	.9030
20-inch.	18.21	49.00	.8532
25-inch.	17.90	68.62	.8684
30-inch.	11.65	52.54	.8676

With proportionately High Efficiency at Port-Gate.

Such results, together with its nicely-working gate, and simple, strong and durable construction, should favorably commend it to the attention of ALL discriminating purchasers. These Wheels are of very Superior Workmanship and Finish.

THE VICTOR WHEEL Is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO THE

STILWELL & BIERCE MFG. CO.,

DAYTON, OHIO, U. S. A.

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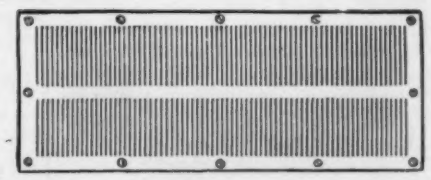
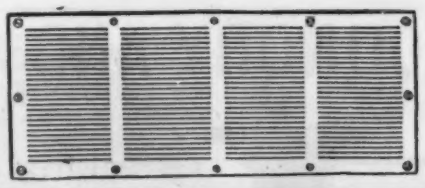
ANNANDALE *Screen Plate Co.,*

PATERSON, N. J.





Manufacturers and Repairers of

SCREEN PLATES.

Our New Plates are made of the

VERY BEST METAL,

and for price and durability cannot be surpassed.

OLD PLATES RE-CLOSED.

THE VOLKER & FELTHOUSEN MFG. CO.

MANUFACTURERS OF

BUFFALO DUPLEX STEAM PUMPS.

FOR SALE AT FACTORY PRICES BY

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Sherriff & Ashworth, Pittsburg, Pa.
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LEE, Massachusetts.

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PAPER + MILL + MACHINERY,

Engines, Machines, Calenders, Trimming Presses, Rag Cutters, Pulleys, Shafting, Gearing, Screen Plates, Cylinder Molds, Engine Roll Bars, Bed Plates, Etc. Iron and Brass Castings.

A NEW STOCK CUTTER EXPRESSLY FOR MANILLA MILLS.

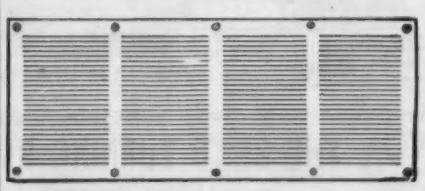
FOSTER & BROWN, SACCARAPPA, MAINE,

MACHINISTS AND IRON FOUNDERS.

SPECIALTIES:

Improved Paper-Coating Machines; Hanging Machines, and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.



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OF BRASS OR CAST METAL,

At Prices that Cannot be Surpassed.

21 MAIN ST. FITCHBURG, MASS.

GEO. S. BARTON, Treas. CHAS. S. BARTON, Pres. LEWIS C. STONE, Manager.

RICE, BARTON & FALES MACHINE AND IRON CO.

(At Old Stand of Rice, Barton & Co.,)

WORCESTER, MASS.,

—MANUFACTURER OF—

PAPER MACHINERY

OF EVERY DESIRABLE VARIETY,

Iron and Brass Castings, Chilled Iron and Paper Calender Rolls, Rag Engines, Rag Cutters, Steam Pressure Regulators, &c.

HYDRAULIC PRESSES, FROM 5 TO 14 INCH PISTON.

A. HUGHES, Pres. J. H. KIRKWOOD, Sec. WM. WILSON, Supt.

WILSON & HUGHES STONE CO.,

Cleveland, Ohio.

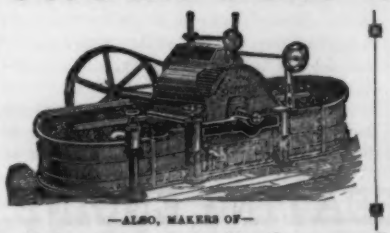
MANUFACTURERS OF THE CELEBRATED

PENINSULA WOOD PULP GRINDSTONES, for Grinding Wood Pulp.

The grit of the stone from our Peninsula Quarry is particularly adapted to grinding Wood Pulp.

All the Wood Pulp Manufacturers who have used these stones say they give general satisfaction, and are much superior to any imported stone. We manufacture stones for the following machines: The Warren-Curtiss, Voelter, Brokaw, Frambach, Valley Iron Works, Stout, Mills & Temple, and all others. In sending orders please be particular to give the exact dimension the stone must be. Give the diameter and face of stone, the diameter and depth of flange, where flanges are to be cut. State size of hole for shaft, and if round or square.

THOMPSON & CAMPBELL



—ALSO, MAKERS OF—

Improved Cylinder and Fourdrinier Machines.

(Successors to KREIDER, CAMPBELL & Co.),

1030 Germantown Ave., Philadelphia, Pa.,

W. H. RUSSELL'S SAND WASHER,

An Improvement in Washing Engines.

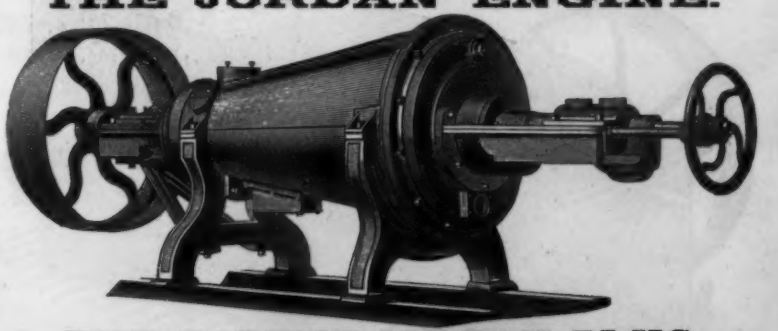
MACHINISTS AND MILLWRIGHTS.

MANUFACTURERS OF

Beating and Washing Engines, Pumps, Rag Dusters and Paper Mill Work in general.

MILLWRIGHT WORK A SPECIALTY.

THE JORDAN ENGINE.

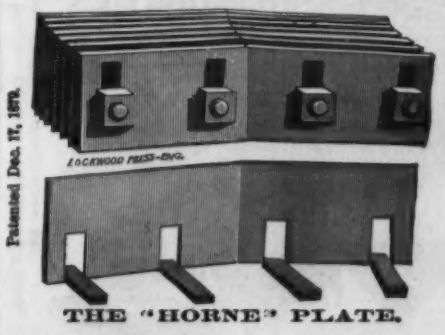


THE PATENT JORDAN PLUG.

Patented May 25, 1869, and Jan. 5, 1875.

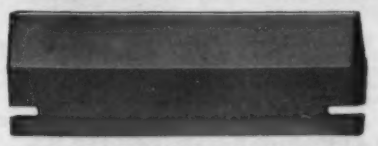
This Plug is an Improvement over all kinds in the country. It can be Refilled with New Bars at the mill where it is used, when worn out, by any ordinary mechanic, in a short time, and thereby save freight and expense of sending it away to be refilled. All of our Jordans contain this style Plug.

Patented Dec. 17, 1878.



THE "HORNE" PLATE.

Pat. Feb. 14, 1882



DOUBLE BEVEL CRUCIBLE STEEL ROLL BAR.

J. H. HORNE & SONS,

MANUFACTURERS OF

Jordan and Paper Pulp ENGINES,

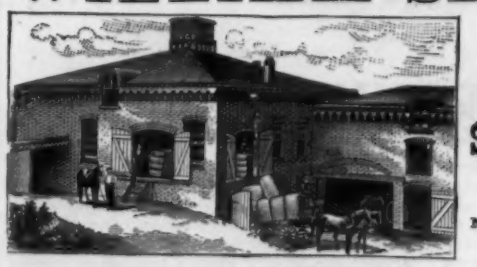
Roll Bars, Bed Plates, Rag Knives.

JORDAN ENGINES REFILLED.

Jordan Bar and Filling Constantly on Hand.

LAWRENCE, MASS.

WILLIAM SHAY, ESTABLISHED 1851.



New Hamburgh, N. Y.,

DEALER IN ALL GRADES OF NEW STOCK OF

Bleached and Unbleached

SHIRT CUTTINGS,

Overall Cuttings,

NEW PRINTS, ROPE AND BAGGING AND WOOL CLIPS.

It has the Indorsement of Leading Bankers, Chemists and Experts.

USE

It has never been successfully altered since its introduction in 1875.

COMMERCIAL SAFETY PAPER,

TO PREVENT THE "RAISING" OF CHECKS, DRAFTS, ETC.

It is the ONLY PAPER, when once written upon, from which the INK cannot be removed, thereby preventing the "raising" of Checks, Drafts, &c.

—MANUFACTURED BY—

MOUNT HOLLY PAPER COMPANY, MOUNT HOLLY SPRINGS, PA., U. S. A.

Also Manufacture: Tub Sized and Loft Dried Map Paper that will not shrink or distort, especially adapted for Printing in Colors, as well as Flat and Folded Ruled Papers of every description.

Manufacturing News.

EASTERN STATES.

The Fall Mountain Paper Company, Bellows Falls, Vt., has placed hydrants on the roofs of some of its mills, as an extra precaution against fire.

Workmen employed at the Farley Paper Company's new works at Farley Station, Mass., recently struck for higher wages. Their places were immediately filled.

Massachusetts capitalists have been visiting Augusta, Me., with a view to securing a site for a paper mill near the pulp manufactory on the east side. Their proposition is to erect a building 160x40 feet.

The Oakland Paper Company, Manchester, Conn., is building a 100 foot brick smoke stack.

A proposition has been made to lease the power at the upper dam at Waterville, Me. If this lease is consummated the intention is to build one of the largest pulp mills in the State. The lease will include a sufficient amount of land for the location of the mill.

A new paper box manufactory, to turn out 4,000 boxes per day, is to locate at South Framingham, Mass.

The success which has attended the installation of the Mather electric lighting system in so many of the paper mills throughout the country has attracted notice in various directions, and has led to the adoption of the system in other factories and in public buildings and institutions. Among the first of the latter is the State Almshouse at Tewksbury, Mass., which gave a contract for 500 lights to the Mather Company, of Manchester, Conn. This plant has operated so well that the State Reformatory at Sherborn, Mass., after investigating competing systems and noting the results at Tewksbury, gave a contract for 320 incandescent lights to Claflin & Kimball, New England agents of the Mather system, and work will be commenced at once and pushed to completion. This system differs materially in some of its points from others. The dynamo is radically different from that of any other system; the magnet or "field," as it is called, is of one piece, without joints or abrupt bends to hinder the passage of the magnetic current, a matter of as much importance in a dynamo as that water and steam pipes should have as few abrupt turns and breaks as possible. The armature, the only movable part in the machine, is not different in form from that of other systems, but by improved methods of construction the destructive evil of "sparkling" is entirely prevented, and this is accomplished without any special appliances. The dynamo is in fact a return to first principles, and is in reality nothing more than a huge horseshoe magnet, modified and improved, but still retaining all the simplicity of a child's toy. It is this great simplicity that constitutes the marked superiority of the Mather Company's dynamo over that of other systems, there being fewer parts and consequently less liability of derangement. When the dynamo is running to its utmost capacity it requires a close examination to see that the machine is in motion at all, so silently and smoothly does it run.

The Augusta Pulp Company, Augusta, Me., recently organized, will put in two wet machines, 76 inches wide each. Its mill will be run by water with 1,000 horse power, and the product will be 11½ tons of pulp (wet) daily. The officers of the company are W. T. Parks, president, and F. S. Lyman, secretary and treasurer.

MIDDLE STATES.

The Paterson Electric Light Company, of Paterson, N. J., has commenced work on its building. The steam plant will consist of five 125 horse power boilers and five 100 horse power engines, which will be erected and finished complete in every detail by the Ball Engine Company, of Erie, Pa.

WESTERN STATES.

It is reported that a paper mill to cost $160,000 is to be built at Omaha, Neb.

The steam plant which is being erected by the Ball Engine Company at Union City, Ind., is nearly completed, and it is the purpose of the local company to get everything in readiness so that it can illuminate the city with electricity on the Fourth of July.

The electric light company at Trinidad, Col., has met with such pronounced success that it has found it necessary to increase its capacity, and to this end has ordered another engine from the Ball Engine Company, of Erie, Pa.

SOUTHERN STATES.

The Rome Gas Light Company, Rome, Ga., will employ electricity. The Ball Engine Company, of Erie, Pa., has been awarded the contract for one of its celebrated steam plants.

Fires.

Fire broke out in the mill of the Russell Paper Company at Lawrence, Mass., on Thursday, the 28th inst., but was extinguished after doing a small amount of damage. Loss about $1,000.

In Town.

Wellington Smith, Lee, Mass.; J. A. Hall and E. R. Solliday, Lambertville, N. J.; Charles Hanmer, Burnside, Conn.; Mr. Maybee, Ballston, N. Y.; Mr. Shannon, Boston, Mass.; J. M. Johnson, Middletown, Ohio; James Symington and James Shand, Lancaster, Pa.; E. B. Ripley, Unionville, Conn.; Mr. Heath, Middle Falls, N. Y.; D. Carmichael, Amsterdam, N. Y.

A chattel mortgage for $1,000 has been foreclosed against the printing plant owned by John J. Croke, Boston, Mass.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; and Real, a mortgage on real estate.]

NEW YORK CITY.

Mortgagor.	*Amount.*
Ferris & Fiss (R.)	$515
Cherouny Printing and Publishing Company (R.)	6,000
Hahn & Lehman	3,000

EASTERN STATES.

Brose Manufacturing Company, New Haven, Conn.	250
Anna T. Cowen, Spencer, Mass	100

MIDDLE STATES.

C. C. Larestrum, Emporium, Pa.	150
James Bell, Philadelphia, Pa.	150

WESTERN STATES.

Alex. Buswell, San Francisco, Cal. (Real)	4,700
Alex. Buswell, San Francisco, Cal.	320
Lamont & Whipple, Rockford, Ill.	1,000
W. F. Hutton, Holstein, Ia	330
Gazette Publishing Company, Abilene, Kan.	1,450
W. D. Perceval, Omaha, Neb.	200
N. S. Dygert (Weston & Dygert), Portland, Ore. (Real)	1,000

TERRITORIES.

Molinelli & Pailsbock (*Record* Publishing Company), Helena, Mon. Ter.	800
Puget Sound Printing Company, Tacoma, Wash. Ter.	2,170

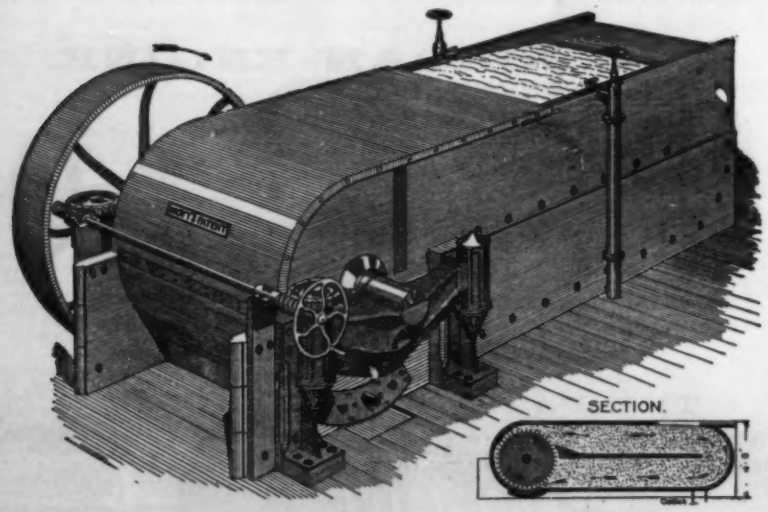
CANADA.

W. H. Daubney, Deloraine, Manitoba	375

LIENS RELEASED.

Alex. Buswell, San Francisco, Cal.	5,000

HOYT'S PATENT BEATING ENGINE.



FOR PARTICULARS ADDRESS **JOHN HOYT, Manchester, N. H.**

THE HARRINGTON & KING PERFORATING CO.
MANUFACTURERS OF
PERFORATED SHEET METALS
OF ALL KINDS
FOR
MILLING & MINING MACHINERY
and all other uses.
CHICAGO, ILL.
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For Mining and Concentrating Works, Coal, Stone and Ore Screens, Gas and Water Works, Clay and Sand Screens, &c.
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Perforators of All Metals.

PAPER MILL WORK A SPECIALTY. Perforated Iron, Copper and Brass for Vats and Drainer-Bottoms, Washers, Pulp Screens, False Bottoms, Stock Boilers, both Rotary and Stationary; Sand Traps, Button Catchers, Suction-Box Covers, Shower Pipes, &c., &c. Screens and Filter Plates. Perforated Tin and Brass of all sizes. Iron, Steel, Copper, Brass and Zinc punched to any size and thickness required. ☞ CORRESPONDENCE SOLICITED. SATISFACTION GUARANTEED.

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EASTERN OFFICE: 100 Beekman Street, NEW YORK.

WOOD PULP, STRAW PULP,

—AND—

ROTARY · BLEACHING · BOILERS.

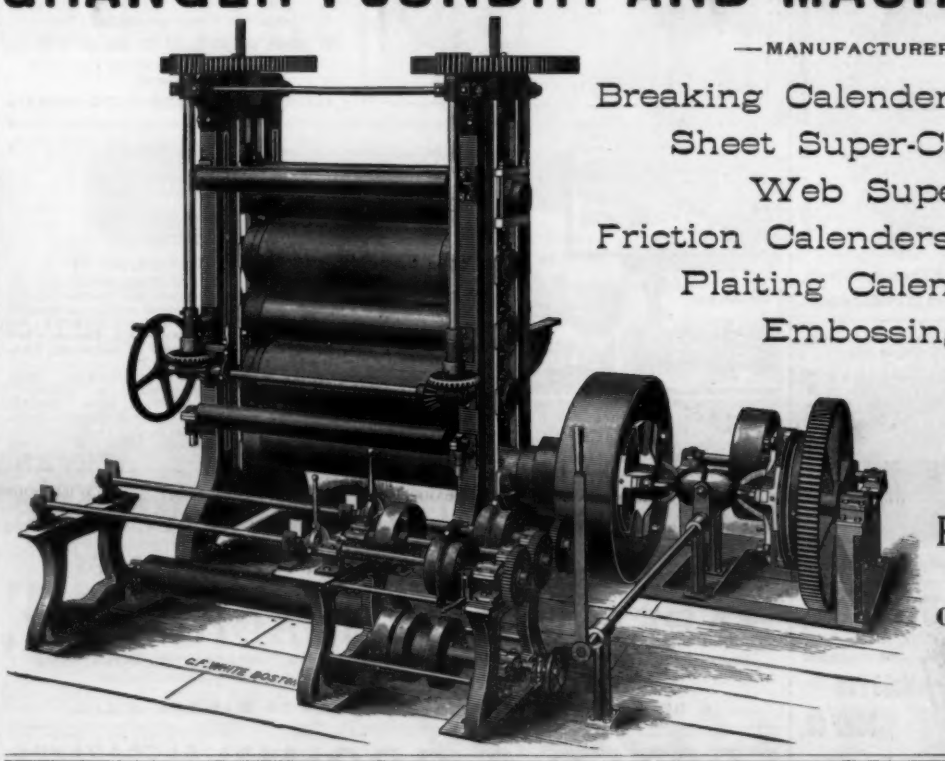
THOSE WHO HAVE UNSAFE ROTARY BOILERS IN USE CAN EXCHANGE THEM FOR THE Loring Patent Rotary, and can be furnished with abundant evidence that the Loring Boiler is absolutely safe, and the only safe Rotary Bleaching Boiler in use. For the production of chemically prepared wood pulp it has been found extremely difficult to make a boiler that would remain absolutely tight for any considerable length of time. I have accomplished this result by adopting modes of construction far in advance of the best methods for producing first-class boiler work, in combination with substances and methods entirely independent of boiler work, and only known to myself. I invite special inquiries in regard to my patent **WOOD-PULP BOILERS**, patent **STRAW-PULP BOILERS**, and Rotary Bleaching Boilers; also to my patent process for extracting water from wood and straw pulp, and to my improved Fibre or Drainer Tanks, and Fibre Valves. The common steam-boilers built by the undersigned have proved more durable and safer than those of any other manufacturer in the United States. Steam boilers, now in good condition, that have been in constant use twenty-eight years, can still be seen in use in Boston. Not one of the many thousand boilers, varying in weight from one half to forty tons, has ever exploded or given out, to cause injury to a single person or to one dollar's worth of property, during the twenty-eight years.

HARRISON LORING, Boston, Mass.

NOTICE.—I have been informed that irresponsible boiler-makers have offered to build Rotary Boilers with whole wrought-iron heads and a hollow journal, which would be an infringement of my patent. Such boilers will be made by the undersigned at low prices—having special tools for the work—and no extra charge made for the patent-right, which would have to be paid by the user if made by an unauthorized person.

HARRISON LORING.

GRANGER FOUNDRY AND MACHINE CO.



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Breaking Calenders,
Sheet Super-Calenders,
Web Super-Calenders,
Friction Calenders,
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Embossing Calenders,

AYERS'
PATENT WINDER,
HYDRAULIC
PRESSES and PUMPS,
Chilled-Iron Rolls,
Cotton Rolls,
Paper Rolls.

PROVIDENCE, R. I.

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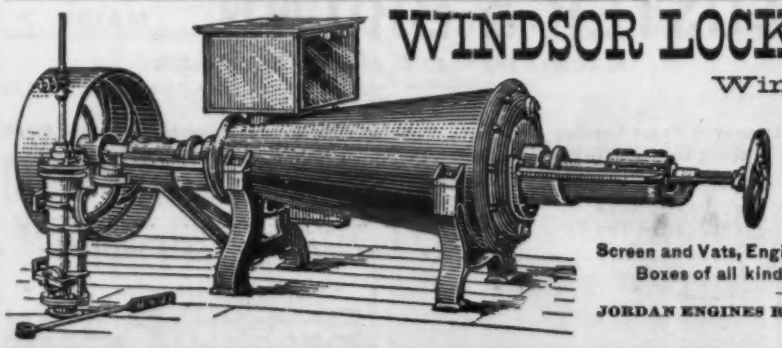

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MANUFACTURERS OF
JORDAN ENGINES, DRYERS,
Rotary and Stuff Pump Reels,
RAG-CUTTERS,
Screen and Vats, Engine Rolls, Suction-Box Plates, Tub Rolls, Stock Boxes of all kinds, Roll Bars, Bed-Plates and Rag Knives.

JORDAN ENGINES REFILLED, and FILLING KEPT CONSTANTLY ON HAND.

CYLINDER WASHERS.

FOR EFFICIENCY AND DURABILITY UNEXCELLED.

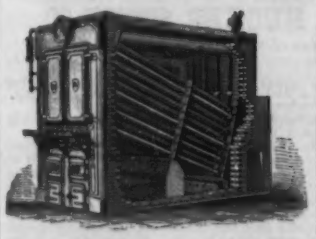
All Iron and Copper except the flash.

THE BEST TURNING RAG ENGINE BUILT.

Tubs either Iron or Wood.

Double Lighters, Relief Lever, Adjustable Breast and Fall, Iron Rolls.

GENERAL PAPER MACHINERY,
DOWNINGTOWN MFG. CO.,
Downingtown, Pa., U.S.A.



ROOT'S New Water Tube Steam Boiler.

ECONOMICAL, DURABLE AND POSITIVELY SAFE.

ABENDROTH & ROOT MFG. COMPANY
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C. E. ASHCROFT, 49 Mason Building, Boston, Mass.
J. S. MOORE, 169 Gravier Street, New Orleans, La.
T. B. PACKER, Sheidley Building, Kansas City, Mo.
V. MERRILL, 149 North 3d Street, Philadelphia, Pa.
S. C. DODGE, Chattanooga, Tenn.

Bleaching.

By a German Paper Maker.

(Concluded.)

The process of bleaching by sprinkling with bleaching liquor, which can be very successfully used with all stocks which are not too hard, which run off well in the half stuff chests and dry well, is an abbreviated bleaching system, which dispenses with the chlorine gas or the wet bleaching in the engine. Even without previous washing, pulp so bleached can be used if it has lain at least two or three days in a drainer and when no wood fibre has been worked up with it.

I may mention here that all kinds of nets may be made into good half stuff if they are half ground with strong, fine or second grade bagging in the wood pulp engine. In this combination the net knots are opened out, while if beaten alone they would not give good half stuff, but mostly knots, which would not entirely disappear in the pulp. It has been asserted that bleaching by moistening is far dearer than the wet bleaching in the beating engine, but this is by no means the case, for hardly two-thirds of the chloride of lime used in wet bleaching is required for the same quantity of pulp, and the action of the chloride of lime is more penetrating, because the half stuff contains only 50 per cent. of water, while it has 200 per cent. in the beating engine. The bleaching liquor in the ordinary wet bleaching is ten times more diluted and cannot act so penetratingly as by the sprinkling system. The action in this latter case is somewhat slower, but even more effective without sulphuric acid, because the chloride of lime comes more in contact with the atmosphere, and through its carbonic acid is slowly but surely decomposed, so that no excess of chloride of lime presents itself at all, and consequently the success is greater.

In chests for this system of bleaching a channel 6 inches deep is made in the bottom and in this the bleach liquor which runs off can collect. The bottom is 6 inches higher on both sides than in the middle, and the walls slope so as to be 5 or 6 inches smaller at the top than below. The sides and bottom are laid with earthenware slabs or tiles in cement and are then almost indestructible; they are clean and cheaper than Dutch tiles or porcelain slabs.

The half stuff should not contain more than 50 per cent. of water, as in gas bleaching. The pulp thus drained is preferable to that which has been relieved of its moisture by a centrifugal machine which has been pressed, and where there is space enough drainers are always better than machines. This is especially so when motive power has to be economized.

Drainers have been made out of every possible material, more particularly from all sorts of granite.

Such chests should not be used as wet bleaching chests, as the chlorine thus developed penetrates the best and thickest granite, and its affinity for the lime will detach pieces from the most solid granite. Chlorine gas will penetrate slabs of granite 6 and 7 inches thick in three or four years. Bleaching chests have been made of hard brick laid in cement, the inside finished with cement and polished very fine and even coated with a linseed varnish. It might be thought that such a smooth, solid surface would be impenetrable, but after a few weeks' daily use the linseed oil shrinks like wet leather and falls off in large flakes, the surface becomes rough, the cement falls into the pulp. Such was the system about 1865. An attempt was then made to cover the sides of the chests with glass plates, which only succeeded when the vertical sides were sloped off a little—some 8 inches to 5 feet of height. With perpendicular sides the glass plates fell off in front, but when sloped they were firmly fixed, dried equally and formed a fine, smooth surface with the best joints. It was believed that all trouble was over, but after two and a half or three years the glass plates began to have little stars in the middle, which proved to be very fine cracks and which gradually extended to the edges, without at the same time springing off, nor could pieces be broken off. But after some four or six weeks whole plates sprang off quite smoothly from the cement. Other methods had to be thought of. Curiously enough, the glass bottom in the chests lasted much longer than the sides, although the contrary might have been sooner expected.—*Papier Zeitung.*

The Ash Contents of Paper.

A correspondent writes to the *Papier Zeitung:* You stated in a late issue that a paper made from the same kind of rags and treated in the same way as a lot previously made showed almost double the ash contents of the first sample. I was reminded by this of an occurrence of a similar kind which surprised me very much at first, but which was afterward explained, and which led me to take care that it should not happen again.

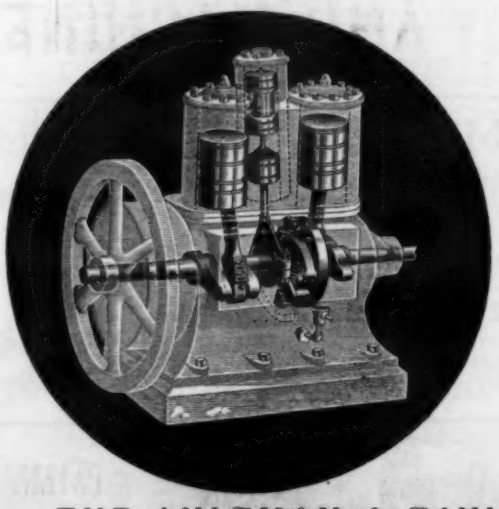
In this case it was not the silicic acid which changed the ash of the paper, but the sizing process. The ash residuum differed according to the various times of the making when the samples were taken.

The writing and foolscap papers made in the mill were of pure rags, and were sized in the mass with rosin and animal size. Their contents in ashes was 2.8 per cent., which may appear somewhat high, but is explained by the hard water.

An order was given to the mill for a certain kind of foolscap, on the express condition that it should not contain more than 2 per cent. of ashes. The paper was made and sized with 4.5 per cent. of rosin and animal size, and 5 per cent. of sulphate of alumina Starch flour and some aniline yellow may be left out of consideration, as their contents of ashes is inconsiderable.

The stock was treated as usual in the beating engines, and work began on the machine. As more pulp was required it was supplied during the work, but it could have no disturbing influence, as the engines were of the same size and were filled with the same weight of half stuff, and exactly the same quantity of size, sulphate of alumina and starch. The first analysis was made after the machine had been working half an hour, and it showed 2.1 per cent. of ashes. Later examinations at different periods of the work showed 1.8, 1.4, 2.6, 2.5 and 2.9 per cent. of ash. The greatest ash residuum was, therefore, more than double that of the least. In appearance and on testing for size there was no difference between the samples.

The cause of this phenomenon could only



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SHAFTING { COSTS TO PURCHASE / COSTS TO MAINTAIN / COSTS TO LUBRICATE / COSTS TO DRIVE } VERSUS THE Westinghouse ENGINE.

Independent Engines convert their whole power into merchantable product.

Take the Engine to the Work, not the Work to the Engine.

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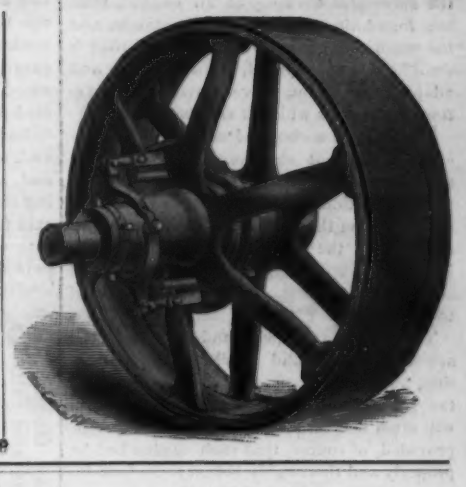
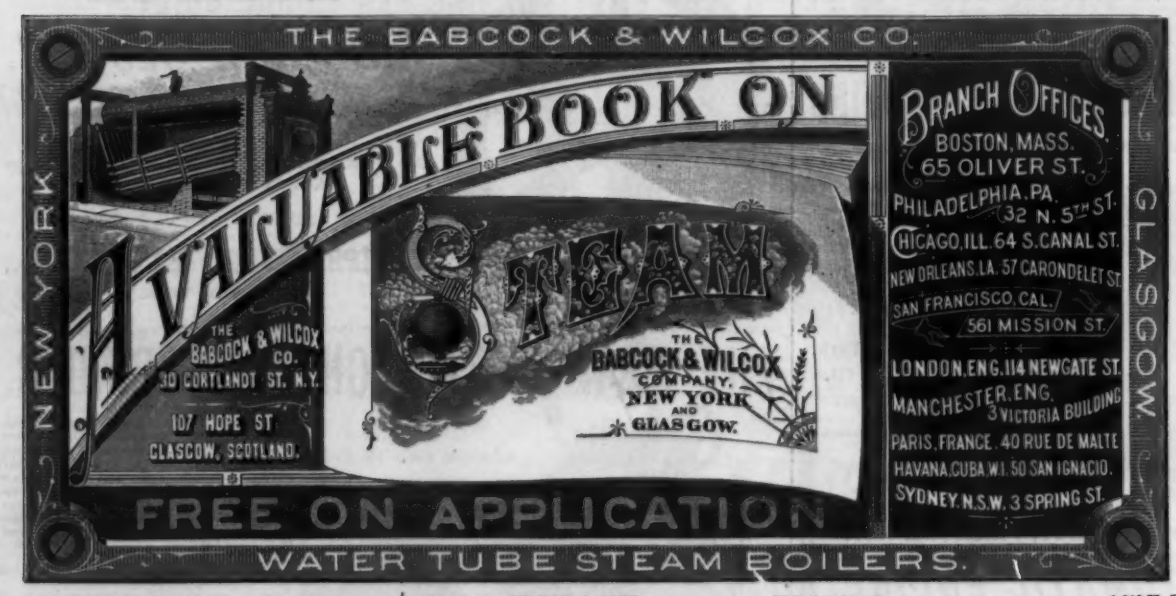
Patent Friction Pulleys and Cut-Off Couplings.
SEND FOR CATALOGUE AND DESCRIPTIVE PRICE-LIST.

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FREE ON APPLICATION
WATER TUBE STEAM BOILERS.

THE BABCOCK & WILCOX BOILER is used by the following firms:

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MARTIN & WM. H. NIXON,	Philadelphia, Pa.,	1,749 "
WARDLOW, THOMAS, & CO.,	Middletown, Ohio,	490 "
GARDNER PAPER COMPANY,	Middletown, Ohio,	250 "
TYTUS PAPER COMPANY,	Middletown, Ohio,	625 "
AMERICAN BANK-NOTE COMPANY,	New York City,	940 "
CUMBERLAND AND PRESUMPSCOT MILLS,	Cumberland Mills, Me.,	882 "
S. D. WARREN & CO.,	Gardiner, Me.,	184 "

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Manufacturers of
Fourdrinier and Cylinder Paper Machines,
Rag and Jordan Engines,
Screen Plates and General Paper Mill Machinery.
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PIPE CUTTING and THREADING MACHINES,
For Hand or Power.
A Portable Cutting and Threading Machine, with which one man can with ease thread pipe up to 6 inch diameter.
NO VISE REQUIRED.
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lie in defective working—a supposition which was found to be correct.

It lay in the defective mixing of the sized pulp. When an alumina solution is brought in contact with a rosin size or with the pulp saturated with it, the matter which first comes in contact with the alumina solution settles down, as being of greater specific gravity, on the bottom of the beating engine, while the lighter matter passes along on top. The simple beating of the sized pulp with the engine roll is not, therefore, sufficient to obtain an intimate mixture of the pulp. The contents of the engine must be thoroughly worked up by the agitator, and the heavier pulp brought up from the bottom so as to mix with the lighter.

Neither does the stirring of the stuff in the beating engine while adding the alumina solution suffice; the stirring must be kept up as long as possible, as only then a perfect mixture will be effected by the beating of the roll.

The rise of the contents of the beating engine by the addition of the alumina solution does not prevent the settling down of the specifically heavier mass. The cause of this is in the escape of gases, and can have no great influence on the distribution of the sized mass.

A large number of experiments as to ash contents proved the correctness of this view. The further observation was made that paper worked without any mineral addition does not exhibit any equal combination in the ash contents of the entire paper web, and that a variance of as much as 0.6 per cent. may occur, according as the samples are taken at different times of making. As the comparative samples were taken from one and the same making of paper, which was taken from the last drying cylinder, a difference in the humidity of the paper cannot be the cause of the changing ash contents, but simply the more or less equal mixing of the mass after the sizing. The most careful treatment of the sized pulp, in conjunction with continuous agitation of the contents of the engine, could not remove the variation in the ash contents. The more varied the fibres of which the paper was made, the more difficult it was to obtain a uniform mass, and the greater was the difference in the proportion of ash in the tests. These remarks apply to papers made without mineral adjuncts. Where mineral additions are used the differences in the ash per centage is far greater. As single tests give varying results, the average result only is to be considered as of importance.

Engine Foundations.

There is not a detail in engine construction and operation that merits greater consideration, or is of greater importance to the successful working of an engine, than the foundation upon which it stands, and too much care cannot be accorded it that it shall have ample spread, stiffness, unity and adaptability to the movements and operation of the parts which it supports.

It should be so bonded and tied that unequal settlement shall not take place, and the height, weight and base should be of such proportions that when the engine is in full operation there shall be no swaying or twisting of the parts, no heating of the journals, no springing or tremor of the bed arising from an unsuccessful transmission of the strains.

The higher the speed and revolution the stiffer and more solid should be the foundation, and the greater the base contact with the supporting earth. A good foundation will often decrease the defects of a poor bed, provided, of course, that such engine bed be properly and thoroughly bolted to its foundation.

When properly constructed and tied together, the engine bed and its foundation should be portions of one complete whole, inseparable and undisturbed in their relationship by the movements of the engine parts while at their hardest work.

A good bottom of concrete of smooth upper surface laid upon a rock or solid earth bottom, upon which the main structure of brick is laid close and jointed with first quality of cement, and the whole capped with one or more large blocks of stone jointed and placed to suit the engine bed and to distribute the weight over as great an area as possible, constitutes the best foundation. Where bricks are scarce the foundation above the concrete bottom may be all of stone, and the larger the stones the better.

Ordinary rubble work is not to be relied upon, the only capacity for retaining and uniting the structure as a whole being contained in the cement. The irregular shape of the stones forming the rubble masonry present, through their lack of contact with each other, rather a precarious and unreliable bond, and the cement is too thinly laid to fix them permanently in their position, in spite of the thrust and twist of engine operation.

It is far better to mold a complete foundation of concrete, capping it, if possible, with the thick, solid blocks already mentioned in connection with the brick foundations. The foundation completed and thoroughly set, the engine frame or bed may be placed in position and lined up and the joints filled and packed with melted sulphur.

The actual nature of the soil or bottom upon which the engine and foundation are to rest, whether it be wet, soft and elastic, whether it be dry, sandy and solid, or whether it be a rock bottom to which the bed might be immediately fastened with a mere leveling foundation between, determines the nature, extent and scope of the foundation, while the size, weight and power of the engine determine its weight and bulk to prevent vibration or tremor.—*American Engineer.*

Crude Petroleum as Fuel.

Fire underwriters, having almost conquered the electric light hazard and now wrestling with the natural gas problem, have an additional problem in the increased use of crude petroleum for fuel. The Chicago Board of Underwriters is now grappling with the matter, and is endeavoring to so regulate the use of fuel as to reduce the fire hazard to as great an extent as possible. The committee of the Chicago board appointed to prepare rules and regulations governing the use of crude petroleum for fuel for generating steam have recommended the following

RULES FOR OUTSIDE PLANTS.

In all cases where a storage supply is kept the storage tank, except for daily use, shall be constructed of tank iron with closed top and inclosed and provided with a sufficient vent pipe or pipes, and shall be located at least 100 feet from any building (pump house excepted) and provided with embankment or wall of sufficient circumference and height to hold the entire contents of the tank which it surrounds, to prevent, in case of leakage or overflow or bursting of tank, the flow of oil toward building. Also a ditch surrounding the embankment or wall on the outside, with drainage if possible, in order to keep the space between the embankment or wall and the tank free from water. For daily consumption permit to be given to have iron tank constructed of boiler iron with close top, having a vent pipe of not less than 1½ inches diameter, which shall extend from the tank to 5 feet above the roof of the nearest adjoining buildings, to allow escape into open air of all accumulations of gas, the capacity in no case to exceed five barrels for each boiler. Said tank must stand on iron supports or solid masonry, and in no case shall it be located in any building. The oil should be conveyed from the storage tank to the supply tank by means of a pipe laid underground, with a forcing pump connection so arranged that it can force the oil from the storage tank to the supply tank when needed, and also reconvey the oil back to the storage tank from the supply tank when the works are stopped for the night or any other cause, and a warranty on the part of the assured that the oil will be so returned. The feed pipe from the supply tank to the boilers to have a steam connection at its extreme end, with a boiler and a stop cock at the tank end, and also an extra arm attachment leading into an iron waste tank, in order to clean said feed pipe when clogged. An additional rate of 1 per cent. shall be charged on all exposed property for the privilege.

RULES FOR INSIDE PLANTS.

It shall be warranted by the assured in all policies that the only oil used shall be what is known as reduced fuel oil, and shall be of such quality as shall have a burning test of not less than 205° Fahr., as tested by Tagliabue's open tester cup. In all cases where a storage supply is kept the storage supply tank shall be constructed of boiler iron, with sufficient vent pipe attached, and shall not be located inside of any building (oil pump house excepted), and shall be buried no less than 2 feet underground. The daily supply tank shall be constructed of boiler iron standing on iron supports or masonry, outside of all buildings, and shall not have a capacity exceeding 250 gallons for each boiler in use, and in addition to the supply pipe from the storage tank said supply tank shall have a return pipe of not less than 2 inches in diameter leading from the body of said tank back to the storage tank, connected in such a manner that the oil can be returned to the storage tank at the close of work on each day, or at all times when such oil shall not be in actual use as fuel, and a warranty on the part of the assured that said oil will be so returned. Both supply and return pipes shall be provided with proper and sufficient cut-offs at each end, and with such contrivances that, in case of clogging of the pipes, they may be cleaned by forcing steam through them with an attachment to the boiler for that purpose. In cases where no storage tank is used the supply tank standing on iron supports or masonry, and free on all sides, shall be constructed of boiler iron, and shall be inclosed in not less than 2 feet of solid masonry, cemented and under ground, and shall not contain at any time a supply exceeding 1,000 gallons. Said supply tank shall be located outside of any buildings and not within 20 feet of the mouth or the furnace using it. It shall also be provided with a 2 inch pipe known as the vent pipe, which shall extend from the tank to 5 feet above the roof of the nearest adjoining building. It shall be warranted by the assured that all petroleum fires shall be started first with wood or coal, and the oil shall not be introduced until 5 pounds of steam are secured. An additional rate of one-fourth of 1 per cent. shall be charged for the privilege, such privilege to be granted only under the foregoing restrictions.

These rules will probably come up at the next regular meeting, and may be adopted after amendment, or may entirely fail to pass.

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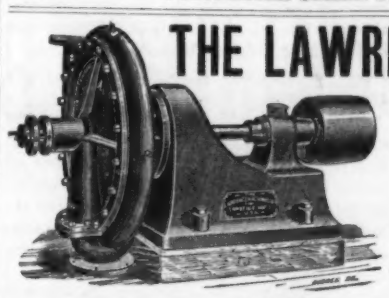

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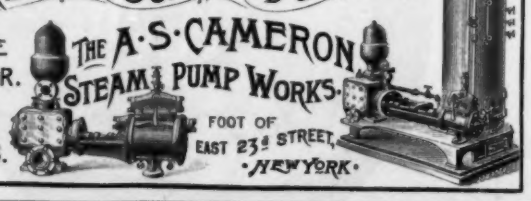

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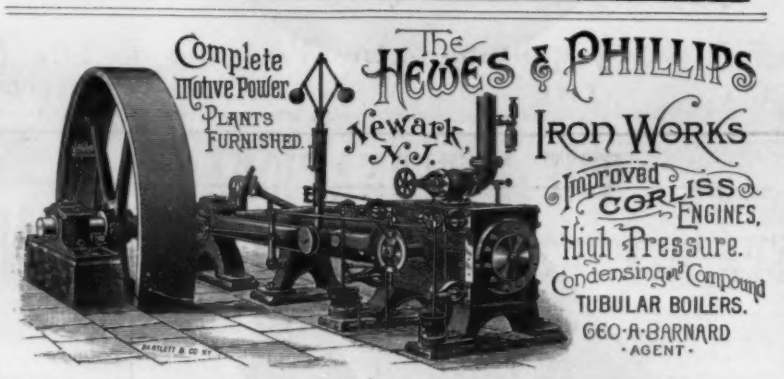

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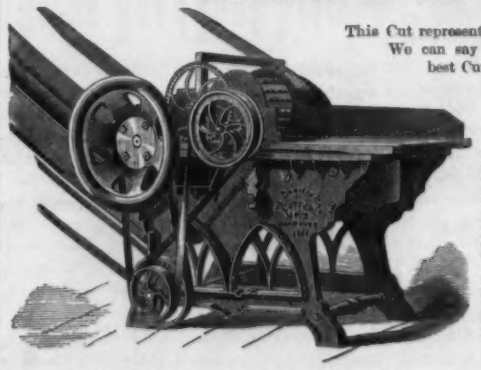

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Ventilation of the Machine Rooms of Paper Mills.*

By S. H. Woodbridge, A. M.

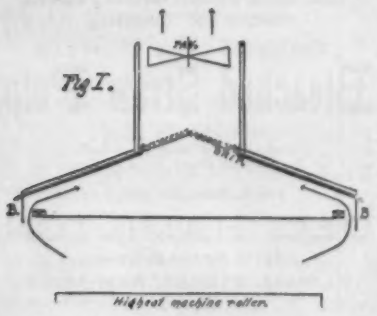
The machine room contains the machinery required for converting paper pulp to paper. From a single machine making six tons of paper per day there may be nine tons of water evaporated in the same time. The air arising from the steam heated dryers is saturated at a temperature of from 100° to 110°, and if allowed to diffuse through the room and cool fog in the air and heavy condensation on chilling surfaces result, the latter injuring the woodwork of the mill; and if condensation is sufficiently rapid directly over the machine, damaging the paper in process of fabrication by the dripping of water upon it from the ceiling.

The heated air, if allowed to escape into the room, raises its temperature to a point which, with the excessive humidity, depresses and enervates the working force, not only in the machine room, but in others which may be above it, or into which, for the sake of relief, it may be ventilated.

The ordinary method of ventilating such a room is by opening the ceiling directly over those parts of the machine yielding the most vapor, and carrying upcast ventilating shafts through the roof into the open air. If the shafts are large and tall, their position well chosen, and the supply to the room equal to the discharge capacity of the shafts, and especially if the room is low studded, the relief may be very considerable; but in practice it is seldom enough to prevent condensation on cooling surfaces, nor are the results economically obtained. Such a method of ventilation allows much of the heated and humid air arising from the machine to diffuse through the room before being discharged, making a larger air movement necessary for the maintenance of any desired condition of temperature and dryness than would be required were the hot and wet air rising from the machine completely and instantly removed. To attempt to ventilate the room through an aperture placed in the roof or wall, whether the motive power is effected by a shaft or a fan, is to make the whole machine room a discharge conduit having large and exposed cooling surfaces.

The most perfect ventilation of such a room is secured when the air discharged from it is identical with that which rises from the machines—no less, no greater, and no other—or when that discharge is so direct and immediate as to preclude diffusion. The most efficient method of effecting such removal is by placing over the machine a hood, covering that part of it from which the objectionable air rises. The hood should overhang the machine a foot or more on all sides, and should be raised above it only to a sufficient height to afford easy working room beneath. Such a hood may have connection with a single shaft, preferably located over that part of the machine from which the greatest quantity of steam escapes, or the outlet may be at several points along its length. In either case it is advantageous to place a diaphragm in the hood, to equalize along its entire perimeter the air current flowing into it, and to concentrate it there, so making the current strongest along the line which would otherwise be the natural line of escape of the heated and damp air (Figure 1).

To prevent the possibility of the dripping of water upon the machine, due to the condensation within the hood, the latter should



be made with sloping roof, which should extend beyond the machine. The diaphragm should be made of cloth stretched upon a light frame, so supported within the hood as to be easily removed for cleansing and renewal as required. The baffers, B B, may also be made of cloth of sufficient stiffness or weight to keep them in the vertical position against the inward pressure caused by the strong current through the slot between them and the edge of the diaphragm.

The air to be moved may best be computed on the basis of the maximum amount of water evaporated per hour. If that rate is 9 tons in a day of twenty-two hours, or 818 pounds per hour, and the temperature of the escaping air is 110° Fahr., the number of cubic feet of air per hour required to move the water is 260,000. Making allowance for a somewhat lower temperature than 110°, and for the excess of heated air rising from the machine, the maximum limit of air to be moved through the hood per hour may be put at 400,000 cubic feet.

If the minimum velocity of air-flow through the hood discharge shaft is fixed at 10 feet per second, the shaft's sectional area must be about 12 square feet, and the cross section of the hood included between the roof and the diaphragm should be at least 10 square feet if the shaft is located at one end of the hood, or 7 square feet if the position of the shaft is central.

The open free space between the diaphragm and the hood should nowhere be less than 2 inches wide, and not less than 3 at that part of the hood under which the greatest part of the steam is developed. If the ventilating shaft is vertical and unprotected by insulation, and exposed for any considerable part of its length to cold air, condensation may take place and water trickle down its walls. In such case provision must be made for catching and draining off the condensed water, to prevent its dripping through the diaphragm upon the paper.

The advisability of using a fan within the discharge shaft must depend upon several conditions, principal among which are the freedom with which air is admitted to the machine room, the height and unobstructed character of the shaft, and the extent to which it is desired to rely upon artificial ventilation in mild and warm weather. With an outside temperature of 50°, a free vertical shaft, 3.5 feet square and 40 feet high, having an abundant air supply at bottom and an internal temperature of 100°, a velocity of flow of 10 feet per second may be obtained, allowing 50 per cent. loss through resistance of friction and other causes. In general, however, the use of a fan adjusted for running at various desired rates of speed must prove more satisfactory, since the rate of air movement is then under more perfect control, and the use of the system of artificial ventilation may be carried further into mild weather; and in exceptional cases, when the room is sheltered and the air supply can be inexpensively cooled, the forced ventilation may be carried through the summer. The power required to run a fan for such work increases with the decrease in temperature difference between the flue and the outside air, but it can at no time be more than one-half horse power, except by some faulty construction.

The best action of the hood is in an important degree dependent on the quietness of the air of the room, a current of 2 or 3 feet per second between the hood and the machine being sufficient to carry a considerable part of the hot and vapor laden air out from under the hood. Hence the currents caused by the entrance of some 7,000 cubic feet of air per minute into the room should be so distributed and directed as to cause scattered and vertical currents rather than concentrated and horizontal ones, and the areas of inflow should be so large as to reduce the rate of flow to at least 5 feet per second.

The heating of so large an air supply is the chief item in the cost of such ventilation. To heat the air to 60°, as in zero weather, requires about 60 pounds of coal per hour, or more than one-half ton per day, and the steam heating surface demanded would be at least 500 square feet, costing some $500, if boxing and suitable air connections are included. The average daily coal consumption through a year of seven winter months may be put at 700 pounds, making a yearly aggregate of 38 tons, costing, according to the variety used and the remoteness of mill from supply, from $100 to $250. The total yearly cost of air heating by this method, including interest on construction cost, repairs, coal burned and interest on coal payments, may be put at from $150 to $300, according to circumstances.

Such an outlay would, however, doubtless find a generous return in the preservation and improved condition of the mill, and the health and efficiency of its working force.

It may frequently be possible to draw the air supply through the rooms adjoining the machine room, so effecting both their ventilation and the heating of the air in transit. The additional heat yielded by radiation from the machine dryers and piping may then be sufficient to maintain the desired temperature, making large auxiliary heating surface unnecessary. Adequate means must be provided for the heating of the machine room without ventilation when the machine is not running.

The cost of ventilation may, however, be greatly reduced by the use of suitable means for effecting a transfer of heat from the discharged to the supply air. The heat contained in the 400,000 cubic feet of discharged air and the 830 pounds of water vapor contained in it is greatly in excess of that required for heating the fresh air supply, even in the coldest weather. Cooling the escaping air through only 30°, the yielded heat would equal 218,000 units, and a corresponding vapor condensation would yield 400,000 more, making a total of some 600,000 against a maximum of 500,000 needed for zero weather. To effect the transfer the discharged air may be made to pass through a battery of galvanized iron pipes, over which the supply air is made to pass by the aid of an auxiliary fan. A possible and convenient form for such an arrangement is shown in Fig. 2. The ventilating shaft V, through which the discharge air escapes under the unaided action of its own levity, or preferably by the aid of a fan, F, has a cross section of 3 feet 6 inches by 3 feet 6 inches. By means of a damper, D, the air movement may be deflected from a straight course through the flue, and passed wholly, or in part, through the transferring arrangement, according to the quantity of heat to be transferred to the incoming air. The boxes, B B, are 8 feet by 8 feet by 2 feet, and they are connected by 144 pipes of 4 inches diameter and 12 feet length, twelve of which are shown. A diaphragm, G, separates the free space between the boxes into two equal parts, the supply air being thus made to pass twice and in reverse directions between the pipes.

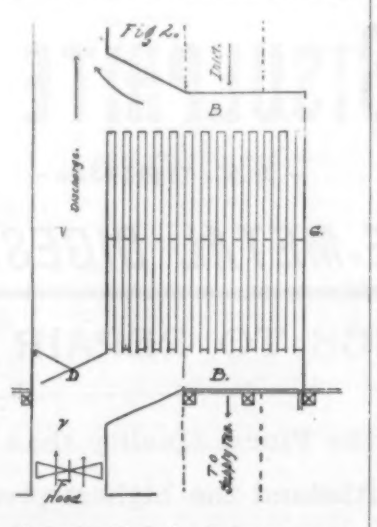
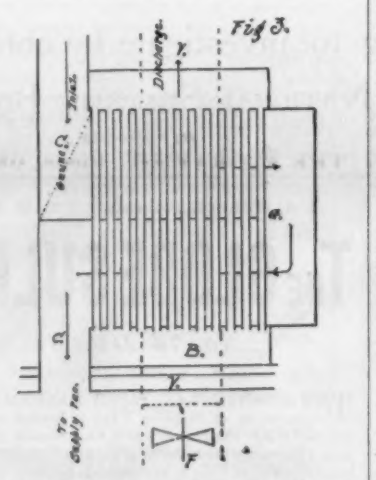
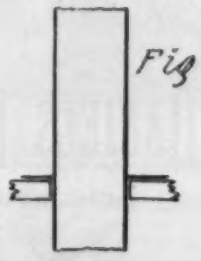


Fig. 3 gives a vertical section of the arrangement from another side, C G C being conduit chambers extending across two sides of the battery of pipes, and designed



to facilitate the equal diffusion of air over and movement between the pipes, which should be spaced 8 inches between centres, and in staggered order. For greater convenience in handling the pipes may be made in two parts, one telescoping into the other, and soldered as they are placed. The lower length of each pipe should be made to extend a half inch or so into the lower box, to prevent the wetting and rotting of the wood, and the pipe should be supported by a flange, as shown in Fig. 4. A similar



flange may be placed at the top of each upper length of pipe, to aid in making a tighter joint. The bottom of the lower box should be metal lined, and arranged for the drainage of from 35 to 60 gallons of condensation an hour.

The cost of such a heat transfer, with fan and air connections, would be no more than the steam heating plant otherwise required, and the expense of using it would be that of running a 1 horse power fan, costing in coal perhaps 5 pounds per hour if the exhaust steam is thrown out-board, and less than one-half pound if the waste steam is used for any mill purpose. The gain would therefore be practically the entire cost of the coal otherwise required for heating, and the principal item of loss would be in the space occupied by the system, 8 feet by 12 feet on the floor and 16 feet high. These dimensions may however, be reduced without affecting a corresponding reduction in the efficiency of the transferring apparatus.

The economic value of such a method of transfer increases with the temperature difference between the outdoor and the discharged air, with the humidity of the discharged air, with its volume and with the increased cost of fuel. Its application to the ventilation of ordinary buildings cannot have the economic value which may be realized when the discharged air is of excessive humidity. When the new building of the Massachusetts Institute of Technology was in process of construction, the writer suggested the adoption of a plan for economizing fuel by the transfer method. The proposed plan would, according to estimates furnished, have required an outlay, in modification of building and in special construction, of some $12,000 or $15,000. The saving in coal would, by estimates, be at least from 150 to 200 tons a year. The interest on $15,000 at 5 per cent. equaling the cost of 150 tons of coal at $5 per ton, the gain under such conditions would be nothing. Yet in buildings of such character and use as are maintained by individual or governmental endowment, the adoption of such a plan might be in the line of economy, since the needed funds for its installation as part of the building's equipment could be much more easily obtained by solicitation than its equivalent annual gift for the purchase of coal.

The above study was suggested by the application of a paper manufacturer for some method of insuring the dryness of an exposed roof built without the usual air space, and described in the following letter:

Boston, April, 25, 1888.

Mr. S. H. Woodbridge:

Dear Sir—In connection with your description of the system of ventilation in the machine room of a paper mill, it may be judicious to state that until a very recent period paper makers have assumed it to be necessary to construct the roof of the machine room, in which the water is evaporated from the paper while in the final process of manufacture, with a large air space in it, under the supposition that such an air space is necessary to prevent the condensation of the moisture from the paper upon the under side of the roof. Hence the common method has been to put over the machine room a pitched roof, ceiled on the under side of the rafters, or else ceiled horizontally from wall to wall at the level of the top of the walls, in the latter case making a triangular cock-loft, to which the underwriters take very serious objection. It is in these concealed spaces that fires spread with the greatest facility, while they are fully protected from the water thrown either inside or outside. Hence the effort of the underwriters has been to induce the paper makers to place over their machine rooms a solid deck of wood, sufficiently thick to prevent the passage of the cold from without, and thereby to do away with the danger of the condensation of moisture on the inside, such heated vapor being subject to condense and drop from a cold surface.

The roof of the machine room to which your system of ventilation has been applied is constructed in this way without any hollow space of any sort, and it has proved to be an entire success.

The effort of the mutual underwriters is now to procure the removal of all dangerous roofs of the old kind, and the substitution of the thick plank roof corresponding to the one described. The roof is substantially of plank, 3 inches thick, covered with 1 inch mortar on the outside, then 1 inch sheathing, and finally covered with any kind of roofing suitable for a flat roof. It has been proved in this, as in many other cases, that solid wood is the best non-conductor of heat—much better than confined air spaces.

At the instance of the mutual underwriters a very large portion of the old-fashioned factory roofs, as well as of the pitched or barn roofs, so called, and nearly all the French roofs, have been removed from textile factories and other works, all being bad forms either for use or safety.

The prejudice of paper makers has been very great in favor of a form of construction of roofs which is both unsuitable and unsafe, but at length they have become convinced that the solid deck or flat roof is the only one fit to be placed even over a paper mill. Many dangers are now being removed, and it is not probable that unsafe and unsuitable roofs will hereafter be placed even over the machine rooms in any new undertakings.

The building which you have ventilated is constructed according to the rules which the mutual underwriters have long advised their members to adopt. It remains for the architects who have charge of the construction of other buildings than those insured by the mutual companies, including dwelling houses, to find how to construct a safe roof consistent with their æsthetic requirements, in place of what have been rightly named the "crazy roofs," under which the greater part of our modern buildings have been constructed. Ovens in summer, refrigerators in winter and fire traps all the time may be the terms most suitable to be applied to the greater part of the roofs heretofore or now being constructed, outside the supervision of the mutual underwriters.

Yours very truly,

Edward Atkinson, President.

The following is appended for the benefit of those who, distrustful of theory, are to be convinced only by the evidence of experience:

Boston, May 4, 1888.

Mr. S. H. Woodbridge:

Dear Sir—Referring to your inquiry as to the advantage of a thorough ventilation of machine rooms in paper mills, I would say that it is a subject which appears to be but little understood by paper manufacturers; consequently a well ventilated building for this purpose is rarely met with.

Poor ventilation seriously impairs the life of all woodwork, causes imperfect paper; directly by water dripping from the ceiling, and indirectly by the unfavorable effect on the workmen.

Since we have adopted the method of ventilation described in your paper (without the proposed method of heating), our workpeople in the machine rooms tell me that they feel much fresher at the end of their day's work than they did before it was introduced, and as a result the character of their work has improved.

We started our new system in October last, and up to the present time I can honestly state that we have not, under the most unfavorable atmospheric conditions, had a particle of moisture condense either on ceiling or walls.

A flat roof I consider an efficient aid to good ventilation, when properly built. It relieves the machine room of useless space which has to be heated; and presenting a smaller area than a pitch roof, there is, of course, a smaller radiating surface.

I prefer a ventilating fan to a natural draught, as by this method one has complete control of the ventilation; and where the fresh air entering the machine room is supplied freely all the moisture which is thrown off from a machine in making 6 to 8 tons of paper per day can be properly removed by a 4 foot Blackman fan driven at about one hundred revolutions per minute.

If paper manufacturers will adopt flat roofs on their machine rooms, constructed after the specifications of the factory mutual insurance companies, and a system of ventilation such as I have referred to, they will at once see their advantage in it and condemn their past conservatism in these particulars as stupidity.

Very truly yours,

Geo. W. Wheelwright.

*Taken from *Technology Quarterly*, May, 1888.

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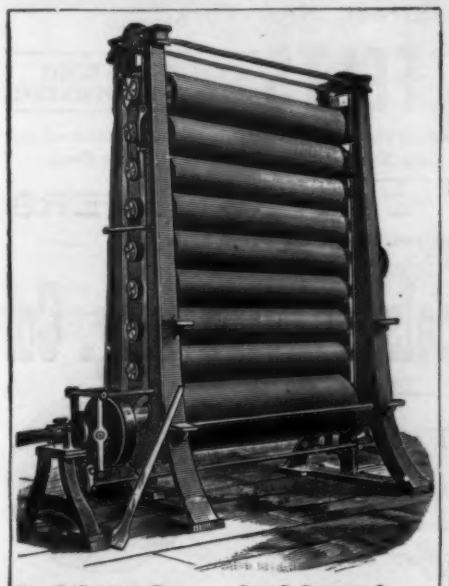

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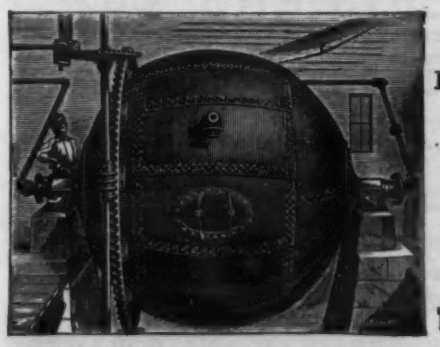

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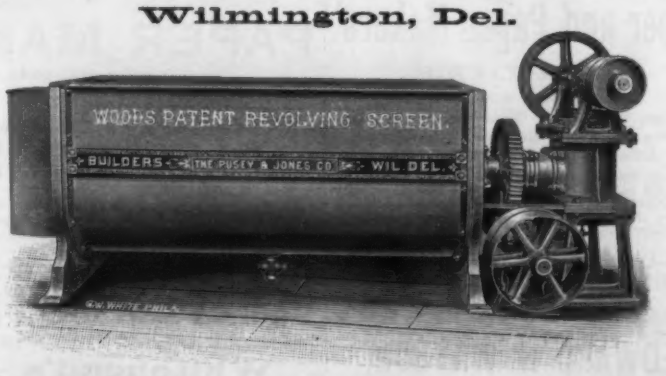

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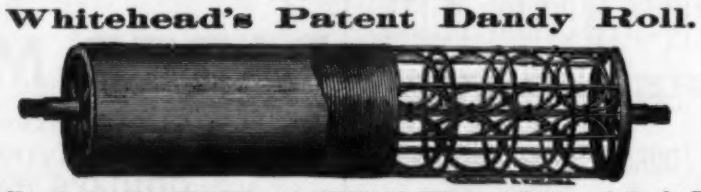

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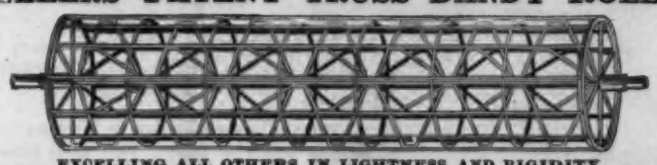

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